

**NRC RESPONSE TO PUBLIC COMMENTS RECEIVED ON
PROPOSED 10 CFR PART 51 RULE,
“REVISIONS TO ENVIRONMENTAL REVIEW FOR RENEWAL OF
NUCLEAR POWER PLANT OPERATING LICENSES”**

**RIN 3150–AI42
[NRC–2008–0608]**

The Nuclear Regulatory Commission (NRC) has published a final rule that amends its environmental protection regulations by updating the Commission’s 1996 findings on the environmental impacts of renewing the operating license of a nuclear power plant (78 FR 37282; June 20, 2013). The final rule redefines the number and scope of the environmental impact issues that must be addressed by the NRC and applicants during license renewal environmental reviews. This final rule also incorporates lessons learned and knowledge gained from license renewal environmental reviews conducted by the NRC since 1996.

On July 31, 2009 (74 FR 38117), the NRC published the proposed rule, “Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating Licenses,” for public comment in the *Federal Register*. The proposed rule would amend Table B-1, by updating the Commission’s 1996 findings on the environmental impacts related to the renewal of nuclear power plant operating licenses, and other NRC environmental protection regulations (e.g., 10 CFR 51.53, which sets forth the contents of the applicant’s environmental report). Together with the proposed rule, the NRC also published a notice of availability of the draft revised GEIS (Agencywide Documents Access and Management System (ADAMS) Accession No. ML090220654); a proposed Revision 1 of Regulatory Guide (RG) 4.2, Supplement 1, “Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications” (ADAMS Accession No. ML091620409); and a proposed Revision 1 to NUREG–1555, Supplement 1, “Standard Review Plans for Environmental Reviews for Nuclear Power Plants” (ADAMS Accession No. ML090230497), in the *Federal Register* (74 FR 38238). All of the documents requested public comments.

The proposed rule provided a 75-day public comment period which closed on October 14, 2009. The NRC received requests to extend the comment period to provide the public more time to analyze and review the legal, regulatory, and policy issues covered by the proposed rule and supporting documents. On October 7, 2009 (74 FR 51522), the NRC granted the requests, and the public comment period for the proposed rule and the proposed revisions to the GEIS, the regulatory guide, and standard review plan was extended to January 12, 2010.

During the public comment period, the NRC conducted six public meetings to solicit comments on the proposed rule, draft revised GEIS, and related draft guidance documents. The official transcripts, written comments, and meeting summaries for the following public meetings are

available electronically for public inspection at the NRC's Public Document Room (PDR) or online in the NRC Library at <http://www.nrc.gov/reading-rm/adams.html>:

- 1) September 15, 2009, Atlanta, GA (ADAMS Accession No. ML092810007);
- 2) September 17, 2009, Newton, MA (ADAMS Accession No. ML092931681);
- 3) September 24, 2009, Oak Brook, IL (ADAMS Accession No. ML092931545);
- 4) October 1, 2009, Rockville, MD (ADAMS Accession No. ML092931678);
- 5) October 20, 2009, Pismo Beach, CA (ADAMS Accession No. ML093070174); and
- 6) October 22, 2009, Dana Point, CA (ADAMS Accession No. ML093100505).

A summary of these meetings is publicly available under ADAMS Accession No. ML093070141.

The NRC received 32 document submissions containing comments from industry stakeholders, representatives of Federal and State agencies, and other interested parties on the proposed rule and supporting documents.¹ Consequently, the NRC developed three separate comment-response documents: one for the proposed rule (this document) (NRC's Agencywide Documents Access and Management System (ADAMS) Accession No. ML111450013), draft revised GEIS (ADAMS Accession No. ML13106A242), and draft regulatory guide (ADAMS Accession No. ML13067A355). In many cases, the commenter explicitly stated that a comment pertained to the proposed rule or one of the supporting documents. When such was not the case, the NRC staff used its professional judgment to decide which of the three comment-response documents best addressed the comment. In a few cases, a comment was included in a comment-response document other than that explicitly stated by the commenter because the NRC staff deemed it to be more appropriate. For those comments containing footnotes, the footnotes appear after the comment in the comment-response document. The NRC considered the comments received on the proposed rule in developing the final rule.

Table 1 provides for each document submission the ADAMS Accession Number and commenter affiliation, name, and abbreviation. Public comments submitted on the proposed rule are grouped by category as listed in Table 2. The NRC has used a 3-box format to display the comment identifier, comment, and NRC response. The "identifier" is used to reference the specific comments within a document submission and is presented in the form XX-YY-ZZ, where:

- XX represents the commenter abbreviation from Table-1 of this document (e.g., CEC, A4NR, and PIIC),
- YY represents the document submission number from the same table, and
- ZZ represents the NRC-assigned sequential comment number.²

¹ A document submission is a comment letter that contains one or more comments. Only three of the 32 document submissions contained comments pertaining to DG-4015.

² The NRC-assigned sequential comment number is noted in the right margin of the annotated copy of the document submissions (ADAMS Accession No. ML12095A189).

For those comments contained in one or more attachments to a document submission, the identifier is presented in the form XX-YY(A)-ZZ, where:

- XX represents the commenter abbreviation from Table–1 of this document,
- YY represents the document submission number from the same table,
- A represents the attachment number, and
- ZZ represents the NRC-assigned sequential comment number.

Within the “comment” box, italicized text denotes excerpts from the public comment received or the comment in its entirety. Non-italicized text is the NRC summary or other description of the comment. Unless expressly noted, any references to the revised GEIS in the non-italicized text are to the version of the revised GEIS that was published along with the final rule (i.e., the final revised GEIS).

The NRC’s responses to the public comments on the proposed rule are discussed below.

Table 1—Comment Submissions on Proposed Revisions to the Environmental Review for Renewal of Nuclear Power Plant Operating Licenses³

Submission No.	ADAMS No.	Commenter Organization ⁴	Commenter Name	Abbreviation	Comments Submitted On ⁵		
					PR	GEIS	RG
1	ML092170082	Private citizen	Eleanor T. Mack	Mack	X	X	
2	ML092780591	Private citizen	Michael S. Hubbard	Hubbard	X		
3	ML092890603	U.S. Environmental Protection Agency	Susan E. Bromm	EPA	X	X	X
4	ML093430240	Sierra Club	Andrew Christie	Sierra		X	
5	ML100120408	Don't Waste Michigan	Kathryn Barnes	DWM	X	X	
6	ML100130210	Pilgrim Watch	Mary Lampert	PW		X	
7 ⁶	ML100150042 ML102110089	Nuclear Energy Institute	Ralph L. Andersen	NEI1	X	X	X
8	ML100150044	Prairie Island Indian Community	Philip R. Mahowald	PIIC	X	X	
9	ML100150045	California Energy Commission	James Boyd	CEC		X	
10	ML100150046	Connecticut Office of the Attorney General	Richard Blumenthal	CT AG		X	
11	ML100150047	Alliance for Nuclear Responsibility	Rochelle Becker	A4NR	X	X	
12	ML100150083	New York State Department of Environmental Conservation	Joan Matthews	NYS DEC		X	
13	ML100150145	San Luis Obispo Mothers for Peace	Jill ZamEk & Jane Swanson	SLOMFP	X	X	
14	ML100150111	New York State Office of the Attorney General	Janice Dean	NYS AG	X	X	X
15	ML100190372	Private citizen	Sally Shaw	Shaw	X	X	
16	ML100250022	Nuclear Energy Institute	Anne W. Cottingham	NEI2	X		
17	ML100250023	Exelon Generation Company, LLC	Michael P. Gallagher	Exelon		X	
18	ML100221838	New York State Department of State	Jeffrey Zappieri	NY DOS	X	X	
19	ML100261276	U.S. Department of the Interior Bureau of Indian Affairs	Diane K. Rosen	BIA		X	
20	ML100250236	Riverkeeper, Inc	Phillip Musegaas & Deborah Brancato	Riverkeeper	X	X	
21 ⁷	ML102240369	Anonymous	Anonymous-1	Anon1		X	
22	ML102240369	Private citizen	Bill Denneen	Denneen		X	
23	ML102240369	Anonymous	Anonymous-2	Anon2	X	X	
24	ML102240401	Sheldon C. Plotkin, Ph.D. & Associates	Sheldon C. Plotkin	Plotkin	X		
25	ML102240656	Anonymous	Anonymous-3	Anon3	X		
26	ML102240657	Anonymous	Anonymous-4	Anon4	X		
27	ML102240658	Private citizen	Klaus Schumann	Schumann		X	
28	ML102240659	Permanent RadWaste Solutions	Dean S. Engelhardt	PRWS	X		
29	ML102240660	Anonymous	Anonymous-5	Anon5	X		

³ One oral comment on final rule implementation was provided at the Rockville, MD, public meeting (October 1, 2009). That comment was provided by Nancy Ranek, representing the Nuclear Energy Institute. The comment identifier is RMD-NEI3-5. A second oral comment concerning the management of information for existing Category 1 issues under the GEIS was made at the Oak Brook, IL, public meeting (September, 24, 2009). That comment was provided by Rick Buckley, representing Entergy Nuclear. The comment identifier is OBIL-Entergy-3. The NRC-assigned sequential comment number is noted in the right margin of the annotated copy of the public meeting transcripts (ADAMS Accession No. ML12095A179).

⁴ Several organizations submitted their comment submission in its entirety twice: U.S. Environmental Protection Agency, Nuclear Energy Institute (Anderson), Nuclear Energy Institute (Cottingham), New York State Department of State, and Riverkeeper, Inc.

⁵ PR = Proposed Rule; GEIS = draft Revised GEIS; and RG = draft Regulatory Guide.

⁶ This is a large document that was split into two files in order to be included in ADAMS. ML100150042 contains the cover letter with Attachments 1 and 2. ML102110089 contains Attachments 3 and 4.

⁷ Comment Submission Nos. 21-28 were hand-delivered to the NRC at the Pismo Beach, California (October 20, 2009); or Dana Point, California (October 22, 2009), public meetings.

Submission No.	ADAMS No.	Commenter Organization ⁴	Commenter Name	Abbreviation	Comments Submitted On ⁵		
					PR	GEIS	RG
30 ⁸	ML102250150 ML102250153	Private citizen	Ace Hoffman	Hoffman		X	
31	ML102280563	Private citizen	Bruce Campbell	Campbell		X	
32	ML100150043	Tennessee Valley Authority	R.M. Krich	TVA	X	X	

⁸ This is a large document that was split into two files in order to be included in ADAMS.

Table 2—Public Comment Categories

No.	Category
1	General Support for the Rule
2	General Opposition to the Rule
3	Offsite Land Use in Transmission Line Right-of-Ways (ROWs)
4	Air Quality (Nonattainment and Maintenance Areas)
5	Geology and Soils
6	Surface Water
7	Surface Water Use and Quality
8	Water Use Conflicts (Plants with Once-Through Cooling Systems)
9	Effects of Dredging on Water Quality
10	Groundwater Use and Quality
11	Groundwater Use Conflicts (Plants that Withdraw More than 100 Gallons per Minute Including Those Using Ranney Wells)
12	Groundwater Quality Degradation Resulting from Water Withdrawals
13	Groundwater Quality Degradation (Plants with Cooling Ponds in Salt Marshes)
14	Groundwater and Soil Contamination
15	Radionuclides Released to Groundwater
16	Exposure of Terrestrial Organisms to Radionuclides
17	Cooling System Impacts on Terrestrial Resources (Plants with Once-Through Cooling Systems or Cooling Ponds)
18	Water Use Conflicts with Terrestrial Resources (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River with Low Flow)
19	Transmission Line Right-of-Way (ROW) Management Impacts on Terrestrial Resources
20	Electromagnetic Fields on Flora and Fauna (Plants, Agricultural Crops, Honeybees, Wildlife, Livestock)
21	Impingement and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)
22	Thermal Impacts on Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)
23	Effects of Cooling Water Discharge on Dissolved Oxygen, Gas Supersaturation, and Eutrophication
24	Exposure of Aquatic Organisms to Radionuclides
25	Effects of Dredging on Aquatic Organisms
26	Impacts of Transmission Line Right-of-Way (ROW) Management on Aquatic Resources
27	Historic and Cultural Resources
28	Transportation
29	Physical Occupational Hazards
30	Electric Shock Hazards
31	Severe Accidents
32	Environmental Justice
33	Onsite Storage of Spent Nuclear Fuel
34	Offsite Radiological Impacts of Spent Nuclear Fuel and High-Level Waste Disposal
35	Cumulative Impacts
36	Transportation
37	Additional Category 2 Issues to be Included
38	Clarity and Consistency
39	Standard for Justifying a New or Changed Issue Categorization
40	Application of Proposed Rule to Existing Plants Already in the License Renewal Process
41	Relicensing Qualifications
42	NEPA Compliant Review
43	Reasonable Assurance
44	Applicable Federal Laws and Regulations
45	Public Participation and Public Meeting Access
46	License Renewal Process
47	Out of Scope Comments

List of Acronyms

ADAMS	Agencywide Documents Access and Management System
ASLB	Atomic Safety and Licensing Board
BEIR	Biological Effects of Ionizing Radiation
CAA	Clean Air Act
CEQ	President's Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLB	current licensing basis
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DG	Draft Regulatory Guide
E.O.	Executive Order
EPA	U.S. Department of Environmental Protection
EPRI	Electric Power Research Institute
ER	Environmental Report
FCAF	Federal Consistency Assessment Form
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FSAR	final safety analysis report
GEIS	Generic Environmental Impact Statement for License Renewal of Nuclear Plants
GI	Generic Issue
ISFSI	independent spent fuel storage installation
NAAQS	National Ambient Air Quality Standards
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PINGP	Prairie Island Nuclear Generating Plant
RCRA	Resource Conservation and Recovery Act
REMP	radiological environmental monitoring program
RG	Regulatory Guide
SCE	Southern California Edison
SEIS	supplemental environmental impact statement
SIP	State Implementation Plan
SNF	spent nuclear fuel
SONGS	San Onofre Nuclear Generating Station
SSCs	systems, structures, and components
SSE	safe-shutdown earthquake
TSCA	Toxic Substances Control Act
TVA	Tennessee Valley Authority
U.S.	United States

1. General Support for the Rule

IDENTIFIER: NEI2-16-1

COMMENT:

Concerning the need for the proposed revisions, NEI agrees with the NRC that the 1996 license renewal GEIS has improved the efficiency of the NRC license renewal process. 74 Fed. Reg. 38,118. We applaud the agency's efforts to ensure the continuing value of the GEIS by periodically re-examining the GEIS findings and modifying those findings (and associated NRC regulatory provisions) as needed.

NRC RESPONSE:

The NRC acknowledges the commenter's statement.

2. General Opposition to the Rule

IDENTIFIER: Mack-1-2

COMMENT:

I vote no, no and no on NRC 2008-0567, NRC 2008-0608, and NRC 2009-0098.

NRC RESPONSE:

The NRC interprets this comment as general opposition to the proposed rule (www.regulations.gov docket number, NRC-2008-0608) being adopted as a final rule. The commenter does not present any further information or argument to support the commenter's opposition to the rule, nor does the commenter provide any specific item to which the NRC can respond. No change was made to the final rule as a result of this comment. The comment is further interpreted as general opposition to the NRC's 10 CFR Part 110 rulemaking, "Export and Import of Nuclear Equipment and Material; Updates and Clarifications" (NRC-2008-0567), which became a final rule on July 28, 2010 (75 FR 44072) and to the NRC's 10 CFR Part 35 direct final rulemaking, "Use of Byproduct Material—Authorized User Clarification" (NRC-2009-0098), published in the *Federal Register* on July 14, 2009 (74 FR 33901) with an effective date confirmation of September 28, 2009, published in the *Federal Register* on August 27, 2009 (74 FR 43619). These two rulemakings, now complete, are outside the scope of this rulemaking. The www.regulations.gov website pages for both NRC-2008-0567 and NRC-2009-0098 indicate that the comment was entered as a public submission for both rulemakings.

3. Offsite Land Use in Transmission Line Right-of-Ways (ROWS)

IDENTIFIER: NEI1-7(2)-1
COMMENT: <i>The final rule should specify for all Category 1 and 2 issues involving transmission lines that only those transmission lines currently needed to connect the nuclear power plants to the regional electrical distribution grid are considered in scope for purposes of the license renewal environmental review.</i>
NRC RESPONSE: The NRC agrees with this comment to the extent that clarification is needed on this issue. Sections 3.1.1 and 3.1.6.5 of the revised GEIS and Section 2.2 of DG-4015 (RG 4.2 S1, Rev. 1) define the extent of in-scope transmission lines subject to license renewal environmental reviews and to this final rule. Table B-1 of the final rule was revised to add a footnote for transmission line-related issues listed in the table and that defines the in-scope portion of transmission lines subject to the final rule.

IDENTIFIER: NEI1-7(2)-13
COMMENT: <i><u>Offsite Land Use in Transmission Line Rights-of-Way (ROWS)</u>—Modify Table B-1 to reflect that the draft updated GEIS indicates that the only transmission lines to be considered in license renewal NEPA reviews are those transmission lines that would not remain operable if the NRC did not renew a nuclear plant's operating license, and such transmission lines run from the plant's turbine generator building to a switching station or substation, typically located on the power plant site, from which electricity is transferred into the regional electrical grid.</i>
NRC RESPONSE: The NRC agrees with this comment to the extent that clarification is needed on this issue. Sections 3.1.1 and 3.1.6.5 of the revised GEIS and Section 2.2 of DG-4015 (RG 4.2 S1, Rev. 1) define the extent of in-scope transmission lines subject to license renewal environmental reviews and to this final rule. Table B-1 of the final rule was revised to add a footnote for transmission line-related issues listed in the table and that defines the in-scope portion of transmission lines subject to the final rule.

4. Air Quality (Nonattainment and Maintenance Areas)

IDENTIFIER: NEI1-7(1)-1; NEI1-7(2)-12; TVA-32-1

COMMENT:

An industry commenter requested that the Category 2 issue, "Air quality during refurbishment (non-attainment and maintenance areas)," renamed "Air quality (non-attainment and maintenance areas)," in the proposed rule, be reclassified as a Category 1 issue. In a separate comment, the commenter requested that Table B-1 be revised accordingly. In a related comment, the Tennessee Valley Authority (TVA), stated that a Category 2 classification was not justified for all license renewals. The TVA recommended that certain threshold criteria be used to make the finding whether the air quality impact belongs to Category 1 or Category 2, such as the facility being required to obtain a non-attainment new source review permit under the Clean Air Act.

The primary industry comment is set forth below:

The U.S. Environmental Protection Agency (EPA) establishes national ambient air quality standards (NAAQS) pursuant to the Clean Air Act (CAA) and requires States to develop State Implementation Plans (SIPs) that contain emission limits and other measures, such as offsetting emission reductions, to assure compliance with NAAQS. Industrial facilities, such as nuclear power plants, must comply with the enforceable requirements contained in SIPs. As noted in the draft updated GEIS, primary NAAQS specify maximum ambient (outdoor air) concentration levels of the criteria pollutants with the aim of protecting public health with an adequate margin of safety. Secondary NAAQS specify maximum concentration levels with the aim of protecting public welfare. Thus, the federal NAAQS (and State standards where established) protect human health and the public welfare. The SIPs establish each state's plan to ensure the NAAQS and state goals are met, which, in turn, provides assurance that state and local air quality is protective of public health and welfare. Individual nuclear plant air permits are issued by the EPA and/or the state to assure compliance with NAAQS, state air quality standards, and SIPs for each area, including those locales that are in non-attainment or maintenance areas. The NRC would meet the goals of NEPA by verifying compliance of facilities seeking license renewal with these CAA programs.

Under the CAA, construction and operating permits, as well as reviews of new stationary sources and major modifications to existing sources, are required. Emission limits or other measures stipulated in permits are established to be protective of human health and welfare, and the environment. For example, for a facility located in a non-attainment area, the regulating agency may require the facility to install technology that limits emissions, or to implement best management practices, or to obtain emission credits, or to limit operational time associated with the emission sources in order to meet established air quality standards. Although the CAA requires the NRC to ensure that their actions conform to SIPs, this obligation is de facto met since all nuclear licensees are required to comply with federal and state CAA regulations and associated permits.

In the 1996 GEIS, a bounding analysis assuming 2300 vehicles for refurbishment activities was presented that concluded the emissions from 2300 vehicles may exceed the thresholds for carbon monoxide, oxides of nitrogen, particulate matter less than 10 μm , and volatile organic compounds in nonattainment and maintenance areas. This analysis forms an upper bound of potential emissions because some workers would carpool to the refurbishment sites, and if the

proposed refurbishment activities were not occurring, others would be driving to other construction sites. Based on lessons learned and knowledge gained during previous license renewal reviews as stated in Section 1.10 of the draft updated GEIS, the issue of air quality from refurbishment activities should be classified as Category 1. This is further supported by the Beaver Valley (Supplement 36), Three Mile Island (Supplement 37) and Indian Point (Supplement 38) Supplemental Environmental Impact Statements, all of which are located in nonattainment counties as shown in Table D.2–2 of the draft updated GEIS, where the NRC concluded that impacts would be SMALL, with emissions associated with refurbishment activities being well below regulatory conformity thresholds specified in 40 CFR 51.853(b)(1) and 40 CFR 51.853(b)(2). The air quality impacts associated with refurbishment activities for plants located in attainment areas would also be SMALL.

For plants that require refurbishment for license renewal, site specific analyses will be considered. As noted above, under the CAA, construction permits, as well as reviews of new stationary sources and major modifications to existing sources, are required. Refurbishment activities will be temporary in nature, with increased emissions having no credible potential for a significant long-term impact on human health and welfare or the environment. Potential adverse impacts are easily foreseeable on a generic basis—with the key issues being increased vehicle emissions due to materials transported to and from the site, and refurbishment workers transportation to the site each day. Although previous license renewal experience has shown SMALL impacts, possible mitigation measures are also easily addressed on a generic basis for this temporary increase in site workers—staggered shifts to minimize spikes of emissions, and/or applicant use of buses and car pools to minimize the emissions of individual workers. In some cases, refurbishment construction activities could result in temporary increases in dust emissions that would be controlled by best management practices and other control measures specified in the air quality permit. Therefore, air quality issues associated with refurbishment are subject to federal or state requirements that would be coordinated between the site and air quality permitting agency, with appropriate controls implemented to ensure a SMALL impact.

The air quality impact of plant operations in the current licensing period was evaluated during the original licensing process for each plant. The impact of continuing operations has been reevaluated with each renewal of air quality permits for each nuclear plant, including those in attainment, non-attainment or maintenance areas, and will continue to be evaluated considering any applicable new air quality standards.

A single determination of SMALL impact is appropriate for continued operations for all plants because it has been shown that current operational impacts neither alter nor destabilize air quality. Classifying this issue as Category 1 is further substantiated on Page 3–47 (Lines 4–7) of the draft updated GEIS where air quality impacts as a result of equipment and cooling tower operations at Hope Creek were evaluated. It was concluded and the regulating agency concurred that even in the worst case situation, the air quality impacts would be considered small, at least in part because of the fact that licensees would be required to operate within State permit requirements.

In several places throughout the draft updated GEIS, the NRC relies on the existence of and widespread facility compliance with regulatory controls to help justify classifying issues associated with radiation or radioactive releases as Category 1 issues (i.e., Human Health, Solid Waste Management, Uranium Fuel Cycle), or to support a conclusion that impacts associated with such issues would be SMALL. The same justification is applicable to air quality impacts since the permittee must comply with emission limits and regulatory controls. Hence, compliance with the permits and regulations ensures that impacts to air quality are SMALL.

In conclusion, the air quality issue meets the Category 1 criteria discussed on page S–5, of the draft updated GEIS since:

- *Environmental impacts associated with the air quality issue apply to all plants.*
- *A single significance level (SMALL) can be assigned to the impacts.*
- *Mitigation of adverse impacts associated with the air quality issue, if needed, would be placed in the Air Permit and re-evaluated during the permit renewal cycle by the permitting agency.*

NRC RESPONSE:

The NRC agrees with this comment. As presented in the revised GEIS, operating experience has shown that the potential air quality impacts from nuclear power plant operations, including cooling tower emissions, and impacts from refurbishment associated with license renewal have been small. This conclusion is based on license renewal environmental reviews conducted since the issuance of the 1996 GEIS. In addition, refurbishment activities have not resulted in exceedances in the *de minimis* thresholds for criteria pollutants in nonattainment and maintenance areas. The NRC's analysis further shows that implementation of best management practices including fugitive dust controls and the imposition of new and/or revised conditions in state and local air emissions permits would ensure conformance with applicable State or Tribal Implementation Plans. On the basis of these considerations, the NRC has concluded that the air quality impact of continued nuclear plant operations during the license renewal term and refurbishment associated with license renewal would be small for all plants. The final rule renames the issue "Air quality impacts (all plants)" and reclassifies the issue as Category 1. As described in the revised GEIS and in the finding column entry for Table B–1, the scope of the issue has been expanded to include emissions from testing emergency diesel generators, boilers used for facility heating, and particulate emissions from cooling towers. The final rule revises the finding column of Table B–1 for this issue accordingly.

5. Geology and Soils

IDENTIFIER: NEI1-7(1)-5

COMMENT:

Although the industry understands the NRC's "environmental resource" approach, consideration of seismic in the geology and soils Category 1 issue is unnecessary since this program unmistakably falls under the Title 10, Part 50 of the Code of Federal Regulations (10 CFR Part 50), "Domestic Licensing of Production and Utilization Facilities: [sic] and not Title 10, Part 51 of the Code of Federal Regulations (10 CFR Part 51), "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions".

More specifically, "Design Bases for Protection Against Natural Phenomena," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR [Part] 50, requires that nuclear power plant structures, systems, and components (SSCs) important to safety must be designed to withstand the effects of natural phenomena such as earthquakes and geologic hazards, without loss of capability to perform their safety functions. Strong vibratory ground shaking, or possible ground failure triggered by seismic shaking, may pose an unacceptable risk to the continued operability of safety related SSCs. 10 CFR [Part] 100, Section 100.23, "Geologic and Seismic Siting Criteria" defines criteria for evaluating the suitability of a proposed site based on consideration of geologic, geotechnical, geophysical, and seismic characteristics of the proposed site.

In addition, Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants," to 10 CFR Part 50, requires that all nuclear power plants be designed so that certain SSCs remain functional if the ground motion from a safe-shutdown earthquake (SSE) occurs. These plant features are necessary to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guideline exposures of 10 CFR 50.34(a)(1) or 10 CFR 100.11. SSE is defined for evaluation of the possible level of ground shaking based on evaluation of potential earthquake sources, past documented earthquakes, and site characteristics. The safety-related SSCs must be able to remain functional under the site-specific SSE level of ground shaking. Requirements associated with 10 CFR [Part] 50 and 10 CFR [Part] 100 are incorporated into the plant design and include engineering practices such as "safety margins" in design, construction, and operations. In addition to existing nuclear plants having active seismic monitoring programs and associated licensing requirements, NRC ensures these requirements are satisfied through the licensing, reactor oversight, and enforcement processes.

Therefore, including seismic consideration as one of the criteria in the geology and soils Category 1 issue is unnecessary because evaluation of seismic hazard is already a requirement for initial plant licensing per 10 CFR [Part] 50, "Domestic Licensing of Production and Utilization Facilities". The federal action of renewing an operating license does not change the seismic hazard. The ongoing regulatory process addresses changes in seismic hazards independent of the age or operating term of nuclear facilities. For example; Regulatory Guide 1.165, ["Identification and Characterization of Seismic Sources and Determination of Safe Shutdown Earthquake Ground Motion", and Generic Issues (i.e., GI-199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States") are products of the regulatory process that address consideration of seismic hazards. Therefore, seismology should be removed from the geology and soils issue since this program cannot logically be analyzed as new and significant information based on continual NRC oversight.

NRC RESPONSE:

The NRC agrees with this comment and the consideration that the federal action of renewing an operating license does not change the seismic hazard for a nuclear power plant. As reflected in the final rule and as detailed by the commenter, the NRC considered historical earthquake data as one of the bases when it licensed existing nuclear power plants. Further, the NRC requires all licensees to take seismic activity into account in order to maintain safe operating conditions at all nuclear power plants. When new seismic hazard information becomes available, the NRC evaluates the new information to determine if any changes are needed at existing plants. This reactor oversight process, which includes seismic safety, remains separate from license renewal. As also noted by the commenter, the NRC recently completed the Generic Issues Program Safety/Risk Assessment Stage for Generic Issue 199 that evaluates recent updates to estimates of the seismic hazard in the central and eastern United States. Generic Issue 199 has progressed to the regulatory assessment stage and reflects the NRC's process of continually evaluating new data to determine if any changes are needed at existing plants. Consequently, the title of this new Category 1 issue has been changed to "Geology and soils" in the final rule in order to be consistent with the NRC's resource-based approach to NEPA compliance. Further, the issue discussion has been revised to clarify that seismic conditions are collectively considered on an ongoing basis as a safety issue, and separately from license renewal environmental reviews.

IDENTIFIER: NEI1-7(2)-3

COMMENT:

Impacts of Nuclear Plants on Geology and Soils—The first two sentences in this section of the Federal Register notice states that the proposed language adds a new Category 1 issue, "Impacts of nuclear plants on geology and soils," as a result of which license renewal applicants will need to determine if there is new and significant information in regard to regional or local seismology. New seismological conditions are said to be limited to the identification of previously unknown geologic faults and are expected to be rare.

The NRC should remove the seismology component from the issue of "Impacts of nuclear plants on geology and soils." While seismology is a geologic attribute of a power plant site that influences the design of plant structures and control mechanisms to withstand events of nature, it is not a resource that is impacted by plant refurbishment and operations during the extended term of operation resulting from license renewal. Hence, any consideration of seismology should occur pursuant to 10 CFR Part 50 rather than in the environmental report for license renewal pursuant to 10 CFR Part 51.

Furthermore, as already discussed in Section IV of this proposed Rule regarding Category 1 issues, it is understood that applicants are required to describe in their environmental reports any "new and significant information" of which they are aware as it relates to these issues in accordance with 10CFR51.53(c)(3)(iv) [sic]. Therefore, it is unnecessary and inconsistent with the manner in which other Category 1 issues are formulated to specifically single out "seismology" in this Category 1 issue as requiring a new and significant information determination.

NRC RESPONSE:

The NRC agrees with this comment to the extent that the seismic setting of a nuclear power plant site is a geologic attribute (condition) of the plant affected environment and that “seismology” is not a resource impacted by continued plant operations and refurbishment activities. The title of this new Category 1 issue has been changed to “Geology and soils” in the final rule in order to be consistent with the NRC’s resource-based approach to NEPA compliance. Further, the issue discussion has been updated in the revised GEIS to clarify that seismic conditions are collectively considered on an ongoing basis as a safety issue and separately from license renewal environmental reviews.

IDENTIFIER: NEI2-16(1)-7

COMMENT:

An industry commenter objected to the inclusion of a new Category 1 issue in the proposed rule, “Impacts of nuclear plants on geology and soils” (the final rule renames the issue “Geology and soils”). The comment is set forth below:

The NRC recognizes that it has no new and significant information identifying an environmental impact of continued operations or refurbishment activities on geology and soils. Moreover, seismology—while within the scope of NRC statutory jurisdiction—falls outside the scope of NEPA itself. NRC regulations promulgated pursuant to the Atomic Energy Act, such as those found in 10 CFR Parts 50 and 100, properly and adequately address any issues related to seismology. The NRC cites no statutory, regulatory, or adjudicatory basis for now including seismologic considerations under NEPA and in the GEIS.

To the extent that this issue is meant to address non-seismologic issues, such as impacts of continued operation and refurbishment activities on “soil resources,” those issues are adequately addressed through the consideration of other Category 1 and 2 terrestrial impacts (e.g., Issue 29, “Impacts of Continued Plant Operations on Terrestrial Ecosystems”). 74 Fed. Reg. 38,123. NEI recommends that proposed Issue 8 be removed from the proposed rule and GEIS revision. (See Attachment 1 to NEI technical comments on the GEIS, pp. 12–13, which states that including seismic consideration as one of the criteria in the geology and soils Category 1 issue is unnecessary.)

NRC RESPONSE:

The NRC agrees in part, and disagrees in part, with the comment. The NRC agrees with the comment to the extent that it has determined that seismic, or seismologic, issues to be beyond the scope of license renewal. The NRC considers seismic issues to be an ongoing safety issue. The NRC requires all licensees to take seismic activity into account in order to maintain safe operating conditions at all nuclear power plants. When new seismic hazard information becomes available, the NRC evaluates the new data and models to determine if any changes are needed at existing plants. This continuous oversight process, which includes seismic safety, remains separate from the license renewal process. See response to comments NEI1-7(1)-5 and NEI1-7(2)-3 for further information.

The NRC disagrees with the comment to the extent that the commenter asserts that the

Category 1 issue, “Geology and soils,” should be removed from Table B–1. For all resource areas considered as part of the plant affected environment, inclusion of those unique resource conditions or attributes that can be affected by refurbishment associated with license renewal and continued plant operations during the license renewal term is useful and appropriate. Consideration of geology and soils from a resource perspective, separate from terrestrial resources as implied by the commenter, is also necessary in order to ensure a thorough characterization of the affected geologic environment of a nuclear power plant. Inclusion of “geology and soils” is fully consistent with the NRC’s resource-based approach to NEPA compliance and helps the NRC to specifically fulfill its responsibilities under 10 CFR 51.70(b) to independently evaluate and be responsible for the reliability of all information used in a supplemental environmental impact statement (SEIS) and to provide evidence that the necessary environmental analyses have been conducted. Please see the response to NEI comment NEI2–16–2, *et al* for further details.

6. Surface Water

IDENTIFIER: TVA-32-2

COMMENT:

*To determine whether a facility's surface or groundwater use would pose any conflicts, NRC maintains the threshold of whether the plant's cooling towers or cooling ponds use make-up water from a river with "low flow." The proposed rule (74 FR 38182) [presumably the commenter intended 74 FR 38132] continues to set this "low flow" threshold at an **"annual flow rate [that] is less than 3.15×10^{12} ft³/year (9×10^{10} m³/year).**"*

*TVA recommends that the proposed rule: (1) clarify the meaning of the term "annual flow rate" and (2) provide the basis for the threshold flow of " 3.15×10^{12} ft³/year." As to the former, the annual flow should be an appropriate statistical value, perhaps the mean annual value. In regard to the latter, TVA believes that the trigger for requiring an assessment of the impact of the proposed action on the flow should be linked to a statistical property of the source waterbody at the location of the plant. For example, the rule could set this trigger at a mean annual flow that is in excess of **d** percent of the mean annual flow of the river, where **d** is a meaningfully defined instream and riparian ecological standard for the source waterbody. While defining an appropriate ecological standard for the source waterbody would require a systematic evaluation, the use of such a rigorous standard would provide a far more objective trigger than a "one size fits all" number, such as 3.15×10^{12} ft³/year.*

NRC RESPONSE:

The NRC agrees with this comment. The final rule amends 10 CFR 51.53(c)(3)(ii)(A) to remove the reference to the annual flow rate. In addition, the final rule makes corresponding changes to the surface water and groundwater issue descriptions and finding column entries listed in Table B-1, such as by removing references to "low flow." The NRC has also made corresponding changes to the revised GEIS and associated guidance documents.

The term "low flow" was used in the 1996 GEIS to define the difference between plants located on "small" rivers versus those on "large" rivers as related to annual river flow. The NRC has subsequently determined that the use of the terms in categorizing river flow and in directing industry as to which plants require an evaluation of water use conflicts is of little value considering that only 3 plants still in operation would qualify as "large" river plants while all others would be "small" or low flow river plants. Further, any river, regardless of size, can experience low flow conditions of varying severity during periods of drought and as further influenced by specific conditions in the affected watershed such as the effect of upstream diversions.

7. Surface Water Use and Quality

IDENTIFIER: EPA-3-5

COMMENT:

NRC is proposing to amend Title 10, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions" by updating Table B-1. The discussion on "Surface-Water Use and Quality" indicates that NRC expects licensees to use best management practices during the license renewal term for both continuing operations and refurbishment activities and that the impact of these practices would continue to result in small impacts for all plants. However, EPA is aware of several examples where long term operations were approved to continue without the consideration of new information regarding water quality. For this reason we recommend that [sic] proposed rule specifically include the requirement for the applicant to review the biennial water quality reports required by the Clean Water Act for each state during the relicensing process. Total Maximum Daily Loads and 303(d) listings for impaired water should also be reviewed. NRC should also consider any changes in the local hydrology that may result in the flooding of the area where the nuclear power plant is located.

NRC RESPONSE:

The NRC appreciates EPA's comments but disagrees with the role that EPA would have the NRC play in Clean Water Act (CWA) regulation. The issue noted by EPA has been renamed "Surface water use and quality (non-cooling system impacts)" in the final rule. The proposed rule consolidated two closely related Category 1 generic issues having to do with impacts of nuclear plant refurbishment, including associated construction, on surface water use and quality, respectively. As described in the revised GEIS, the proposed rule also expanded the scope of this consolidated Category 1 issue to cover continued operations during the license renewal term. The final rule adopts these changes.

As discussed in the revised GEIS, the NRC's conclusion that this issue is generic to all plants (Category 1) and has a small level of impact is based upon licensees' use of best management practices and adherence to spill control and prevention plans. Many of the best management practices employed by licensees and the spill prevention and control plans are required by EPA issued or CWA delegated state issued permits or by applicable regulation. In addition, previous license renewal environmental reviews have shown that both refurbishments associated with license renewal and continued operations during the license renewal term have had negligible effects on surface water use and quality.

In addition, as part of license renewal environmental reviews, the NRC reviews any new and significant information that an applicant for license renewal is required to include in its environmental report under 10 CFR 51.53(c)(3)(iv). The NRC reviews the environmental report and also conducts an environmental site audit to identify any information that could change the conclusion in the GEIS for a particular generic issue. In preparing plant-specific SEISs to the GEIS, the NRC considers an applicant's compliance with environmental quality standards and requirements, including water pollution limitations and associated permitting provisions, imposed by regulatory agencies, in accordance with 10 CFR 51.71(d).

Based upon plant operating experience and the expectation that licensees will comply with regulatory or permit requirements to employ best management practices and adhere to spill prevention and control plans, the NRC has determined that this issue is properly classified as a

Category 1 issue. Unless there are examples where approval of a nuclear power plant license renewal application resulted in the degradation of surface water resources beyond a small impact (that is such approval resulted in a degradation that caused a moderate or large impact), and the NRC is not aware of any such examples, then there is no basis to reclassify this issue.

Moreover, the NRC does not have the authority or the technical expertise to require its licensees to allocate pollutant loads for any given body of water. Similarly, the NRC does not have the responsibility to assess, or the authority to require an applicant for license renewal to assess, whether effluent limitations imposed by EPA or an EPA-delegated state agency on a nuclear power plant contain sufficiently stringent water quality effluent and total pollutant loading limitations.

Finally, the NRC disagrees with EPA's comment regarding the need to consider local hydrologic changes surrounding a nuclear power plant and potential flooding. The potential for storm damage, erosion, and flooding to affect safety systems at a nuclear power plant is not addressed in the environmental review of license renewal, but rather in the license renewal safety review. In preparing the "affected environment" discussion in a plant-specific SEIS, NRC specifically documents current environmental conditions with regard to water resources, including the location of plant structures relative to waterways, their floodplains, associated aquatic and terrestrial resources (e.g., wetlands), and local and regional severe weather conditions to include flood events. In order for hydrologic changes, local flooding or any other potential impact to be considered within the license renewal environmental review, such potential impacts must arise from or have some nexus to, the license renewal action. To date, however, the NRC is aware of no information or operating experience to indicate that nuclear power plant operations have had any effect on hydrologic conditions or flooding potential at any site.

No changes have been made in the final rule in response to this comment.

IDENTIFIER: Hubbard-2-1

COMMENT:

One commenter challenged the NRC's determination classifying the proposed rule and draft GEIS issue "Surface-water use and quality" as Category 1. The comment is set forth below:

This criterion is proposed to remain a Category 1 issue that is addressed in the revised GEIS generically for all nuclear power plants. It is illogical to propose Category 2 status for terrestrial ecosystems (no. 29) and for five groundwater issues on the basis of differing environmental conditions at each nuclear plant site, and then claim that surface-water ecosystems are so similar that a generic impacts analysis can be used to represent all the diverse surface-water systems surrounding all nuclear plant sites.

"Environmental conditions are different at each nuclear plant site and impacts cannot be determined generically." This statement is used throughout the proposed revisions discussion to explain why certain issues cannot be given Category 1 status and I fail to see how this statement does not also apply to surface waters. This issue should be Category 2 and addressed individually in the SEIS for each re-licensing application due to differing environmental conditions and diversity of surface waters across the nation.

For example, at least 24 of 104 nuclear power reactors are situated in areas subject to severe drought conditions. Water use changes due to human population growth, alteration of agricultural water use, and increased environmental limitations on water use need to be evaluated on a site-by-site basis. Nuclear power plants consume enormous amounts of water and, as water restrictions and limitations become tighter, the availability of water for use in nuclear plants will become an increasingly questionable use for our water supply. Water use issues will be dynamic and cannot be addressed with a generic, fixed-in-time impacts assessment.

In addition to the need to perform site-by-site analysis of surface-water use impacts, the quality of surface waters is also site specific, dynamic, and unfit for a generic impacts analysis. For example, tritium is produced by all nuclear reactors and routinely released to the environment in both liquid and gaseous forms. While Category 2 issue numbers 27 and 28 deal with radionuclide and other contamination of groundwater, no such issue is included for surface-water quality. From tritium release data supplied by nuclear power plants to the NRC, reported liquid tritium releases vary from 142 curries (Fort Calhoun) to 1715 curries (Millstone 3) for pressurized water reactors in 2005. This is a difference greater than a factor of 10 and exemplifies how a generic impacts analysis is inappropriate.

Furthermore, tritium releases are found to vary by reactor type, vary among reactors of the same type and capacity, and to vary year by year from the same reactor. Gaseous tritium releases vary by several factors of 10 among reactors and can also impact surface waters via rainfall. How can a generic impacts analysis cover all this variation representatively?

*Discussion of this issue in the proposed revisions concludes that "the impact on surface-water use and quality during a license renewal term will **continue** to be small for all plants." [emphasis added] [sic] However, tritium is generally the largest routine release from nuclear plants and has caused widespread, low-level contamination of water bodies. Tritium monitoring and reporting requirements set by the NRC have been found to be inadequate due to differing measurement practices, inconsistencies in how tritium releases are reported, lack of representative sampling locations, and failure to monitor for rainfall during gaseous discharges. These inadequacies in tritium release data alone illustrate how a generic impacts analysis is inappropriate for the issue of surface-water quality.*

In addition to variation in reported routine tritium releases among nuclear plants, tritium leaks have occurred at (at least) seven nuclear plants. That represents over 10 percent of the currently active reactors. Obviously, at least one-tenth of the nuclear reactors have leak histories differing from those plants that have not had leaks. Representative consideration of surface-water quality should include site-specific leak histories and should be more rigorous than is provided by the revised GEIS.

It is my understanding that a nuclear plant applying for a license renewal has been releasing tritium for nearly 40 years. There are at least 16 nuclear reactors on the banks of the Mississippi River and its major tributaries. There are at least six nuclear reactors on Lake Michigan. How will a generic impacts analysis for surface-water quality be representative for surface waters such as these that are impacted by more than one nuclear power plant? How can a generic impacts analysis, which by nature must be fixed in time, account for the year-by-year accumulation of tritium in our surface waters?

Does the NRC understand that it takes about 250 years for tritium to decay to negligible levels? Does the NRC understand that tritium can enter the body through ingestion, absorption, or

inhalation and that numerous agencies, including the National Academy of Sciences and the EPA, have concluded that there is no level of radiation exposure that is harmless or beneficial, and that even the smallest dose of ionizing radiation is capable of contributing to the development of cancer?

Consideration of tritium and other contaminant releases affecting surface-water quality should be a Category 2 issue renewed on a site-by-site basis in the SEIS for each license renewal application.

NRC RESPONSE:

The NRC disagrees with this comment. As referenced by the commenter, issue number (9) of the proposed rule, "Surface-water use and quality," has been renamed "Surface water use and quality (non-cooling system impacts)" in the final rule. The final rule both consolidates two 1996 GEIS Category 1 issues, "Impacts of refurbishment on surface water use" and "Impacts of refurbishment on surface water quality," and also expands the consolidated issue to include the impacts of continued operations. This consolidated issue concerns those activities, common to all nuclear power plants that are not related to cooling system-related water withdrawals and radioactive and non-radioactive effluent discharges. As described in the revised GEIS, non-cooling related surface water uses evaluated under this issue include uses such as use for construction (e.g., concrete production) and dust control associated with refurbishment. Water quality issues considered under this issue include those routine operational and refurbishment activities that could result in soil erosion and spills of hydrocarbon fuels, paints, or other chemicals which may affect the quality of receiving waters. Operating experience has shown that these non-cooling system activities have had negligible effects on surface water. Impacts are expected to be minimized by the application of best management practices and implementation of spill prevention and control plans. As a result, the NRC has concluded that these activities are common to all nuclear power plants (i.e., generic in nature) and the impact on surface water use and quality during the license renewal term will continue to be small for all plants. Thus, this issue is properly classified as Category 1.

Concerns identified by the commenter regarding consumption of water by nuclear power plants, including surface water availability due to drought, are addressed under issue number (17) in this final rule, "Surface Water Use Conflicts (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River)." Under the final rule, this 1996 GEIS issue remains a Category 2 issue with an impact range of small to moderate. As a Category 2 issue, license renewal applicants must provide site-specific information and the NRC must analyze the issue in the site-specific SEIS. As described in the final rule and the revised GEIS, issue number (17) concerns makeup water requirements, water availability, and competing water demands.

Radioactive gaseous and liquid effluent releases, including tritium, from nuclear power plant operations and refurbishment associated with license renewal are addressed under issue number (57), "Radiation Exposures to the Public." Radiation doses to members of the public from the current operations of nuclear power plants have been examined in the 1996 and the revised GEIS from a variety of perspectives (i.e., releases of radioactive gaseous and liquid effluents, radiation from radioactive waste storage buildings, radiological impacts from refueling and maintenance activities, and inadvertent leaks of radioactive liquids), and the impacts were found to be within dose standards specified in the NRC's 10 CFR Part 20 and Appendix I to 10 CFR Part 50, as well as EPA's 40 CFR Part 190. No aspect of future operation or refurbishment associated with license renewal has been identified that would substantially alter this situation. Further, no effect of nuclear plant aging has been identified that would

significantly affect the amount of radioactive effluents discharged during routine plant operations. Public doses are expected to remain within dose standards. Because there is no reason to expect that radioactive effluents will increase during the license renewal term, doses from continued operation are expected to be within regulatory standards.

In addition to the NRC's requirements to monitor radioactive effluents (routine and inadvertent)⁹ discharged into the environment, each nuclear power plant is required to have a radiological environmental monitoring program (REMP).¹⁰ The REMP quantifies the environmental impacts associated with radioactive effluent releases from the plant. The REMP monitors the environment over time, starting before the plant operates to establish background radiation levels and throughout its operating lifetime to monitor radioactivity in the local environment. The REMP provides a mechanism for determining the levels of radioactivity in the environment to ensure that any accumulation of radionuclides released into the environment will not become significant as a result of plant operations. The REMP also measures radioactivity from other nuclear facilities that may be in the area (i.e., other nuclear power plants, hospitals using radioactive material, research facilities or any other facility licensed to use radioactive material). Thus, the REMP monitors the cumulative impacts from all sources of radioactivity in the vicinity of the power plant. To obtain information on radioactivity around the plant, samples of environmental media (e.g., surface water, groundwater, drinking water, air, milk, locally grown crops, locally produced food products, river, ocean, or lake sediment, and fish and other aquatic biota) are collected from areas surrounding the plant for analysis to measure the amount of radioactivity, if any, in the samples. The media samples reflect the radiation exposure pathways (i.e., inhalation, ingestion, and physical location near the plant) to the public from radioactive effluents released by the nuclear power plant and from background radiation (i.e., cosmic sources, naturally occurring radioactive material, including radon and global fallout). The NRC has standards for the amount of radioactivity in the sample media, which if exceeded, must be reported to the NRC and the licensee must conduct an investigation. The REMP supplements the radioactive effluent monitoring program by verifying that measurable concentrations of radioactive materials and levels of radiation in the environment are not higher than expected when compared against data on the amount of radioactive effluent discharged. As part of its license renewal environmental review, the staff reviews several years of REMP reports to look for adverse data or evidence of a buildup of radioactivity in the environment. The results of the staff's review are discussed in each plant-specific SEIS.

The NRC expects its licensees to continue to comply with its radiation protection standards during the period of license renewal. Therefore, the NRC concludes that the impact of continued operations and refurbishment activities on public radiological exposure would be small for all nuclear plants and it remains a Category 1 issue.

No changes have been made in the final rule in response to this comment.

⁹ 10 CFR 20.1302(a), 10 CFR 20.1501(a), and Appendix A to 10 CFR Part 50, Criterion 64

¹⁰ Appendix A to 10 CFR Part 50, Criterion 64

8. Water Use Conflicts (Plants with Once-Through Cooling Systems)

IDENTIFIER: Hubbard-2-2

COMMENT:

One commenter challenged the NRC's determination classifying the proposed rule and draft GEIS issue "Water use conflicts (plants with once-through cooling systems)" as Category 1. The comment is set forth below:

It is inconceivable that the NRC should conclude that this issue can be adequately dealt with generically. The generic impacts "evaluation" seems to conclude that, since these types of conflicts have not been "found to be a problem" in the past, water-use conflicts will continue not to be a problem.

Increases in human water use and realization that adequate water levels and flows are necessary to support healthy aquatic ecosystems dictate that water use impacts be re-evaluated because, this issue is dynamic and a generic impact assessment is not.

"Environmental conditions are different at each nuclear plant site and impacts cannot be determined generically." I do not see how it can be argued that this issue does not fit with that statement. This issue should clearly be assessed on a site-by-site basis and, therefore, given Category 2 status.

NRC RESPONSE:

The NRC disagrees with this comment. The NRC has concluded that this issue, renamed "Surface water use conflicts (plants with once-through cooling systems)" in the final rule, is properly classified as Category 1. The NRC has clearly stated its methods and criteria for environmental issue identification and categorization. The NRC's definitions and categories are detailed in Section S.3 of the revised GEIS and in the footnotes to Table B-1 in Appendix B to Subpart A of 10 Part 51, as revised pursuant to this final rule. Under the criteria set forth in the GEIS, Category 1 (generic) issues are those that meet all of the following criteria: (1) the environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics; (2) a single significance level (i.e., small, moderate, or large) has been assigned to the impacts (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel); and (3) mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures would probably not be sufficiently beneficial to warrant implementation.

A generic, Category 1 grouping is appropriate for the issue cited by the commenter, which has been renamed "Surface water use conflicts (plants with once-through cooling systems)," because of the common cooling systems employed and the fact that environmental impacts were found to be the same or similar at all plant sites based on previous license renewal environmental reviews. This finding is further supported by the NRC's analysis presented in the revised GEIS which found that water use conflicts associated with once-through cooling systems were small. This finding was based in part on the fact that once-through cooling systems return most of their withdrawn water to the same surface water body, with evaporative

losses of less than 3 percent. Consumptive use by plants with once-through cooling systems during the license renewal term is not expected to change unless power uprates, with associated increases in water use, are proposed. Such uprates would require a NEPA analysis by the NRC. Note that the designation of an issue as a Category 1 issue does not mean that potential impacts are not considered. Changes in plant operating parameters or new and significant information pertinent to an evaluation of impacts are considered during preparation of plant-specific supplements to the GEIS. Data are reviewed in part for information that could change the conclusion in the GEIS with regard to an issue. In the case of water use conflicts, this might include changes in water availability including increased demand by other users or reduced flows. Thus, even though this issue is considered to be Category 1, there are mechanisms in place to conduct a full site-specific review if new and significant information warrants such a review.

No changes have been made in the final rule in response to this comment.

9. Effects of Dredging on Water Quality

IDENTIFIER: NEI2-16(1)-8

COMMENT:

An industry commenter objected to the proposed rule's inclusion of a new Category 1 issue, "Effects of dredging on water quality" (renamed "Effects of dredging on surface water quality" in the final rule). The comment is set forth below:

In NEI's view, the NRC has failed to provide a clear legal or regulatory basis for adding, this environmental impact to the GEIS, and should revise the proposed rule to include such an explanation. On the threshold matter of jurisdiction, dredging activity is performed under a U.S. Army Corps of Engineers permit and, as NRC acknowledges, each dredging action would be subject to a site-specific environmental review conducted by the Corps. 74 Fed. Reg. 38,122. In terms of the issue's significance, the proposed rule does not indicate why the potential impact of dredging on water quality was not evaluated in the 1996 GEIS and what events have prompted NRC to propose inclusion of the issue in the revised GEIS. [commenter footnote] For all of these reasons, this issue need not and should not be included as a new issue in the GEIS absent sufficient justification. NEI requests that NRC either revise the proposed rule to provide its rationale for adding this new issue or omit it from the revised GEIS.

[Commenter footnote]: *Regarding Issue 18 (effects of dredging on water quality), it also can be argued that this new issue falls outside the scope of NEPA, which only requires consideration of "actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(C). NEPA does not require consideration of "inconsequential small" impacts. This argument should be addressed as the NRC determines whether to include this new Category 1 issue in the GEIS.*

NRC RESPONSE:

The NRC disagrees with this comment. As documented and described in the revised GEIS, dredging in the vicinity of surface water intakes, canals, and discharge structures takes place at some nuclear power plants in order to remove deposited sediment and maintain the function of plant cooling systems. For example, at the Susquehanna plant in Pennsylvania, the plant's river intake and diffuser pipe are dredged annually. Although the impacts of dredging were not evaluated in the 1996 GEIS, the NRC added this issue because dredging is an ongoing operations activity that has an impact on the environment (e.g., surface water quality). It is expected that dredging activities will continue during the license renewal term. Therefore, the NRC has determined that such impacts should be evaluated in its SEIS if the applicant is aware of, or if the NRC determines that there is, new and significant information that could change the conclusion in the GEIS with regard to this issue.

Further, the fact that the Army Corps of Engineers permits these dredging actions, and accordingly, conducts the NEPA analyses on its permitting actions, is not relevant to the addition of this new issue. The Corps' NEPA analyses tend to focus on the disposition of the dredging spoils, not on the impacts of dredging on water quality. In this regard, there may be circumstances where new and significant information pertaining to dredging arises. This then may lead the NRC to conclude that a site-specific analysis of dredging effects on water quality is required during a license renewal environmental review. If the NRC determines that there is new and significant information regarding a prior finding, then it is required by NEPA to analyze

this information. Please see the response to NEI comment NEI2-16-2, *et al* for further details.

No changes have been made in the final rule in response to this comment.

10. Groundwater Use and Quality

IDENTIFIER: Hubbard–2–3

COMMENT:

One commenter challenged the NRC's determination classifying the proposed rule and draft GEIS issue "Groundwater use and quality" as Category 1. The comment is set forth below:

Groundwater quality is dealt with at issue numbers 24 and 25 (Groundwater quality degradation), 27 (Groundwater and soil contamination), and 28 (Radionuclides released to groundwater), and, therefore, the term "quality" should be removed from this issue.

Groundwater quality will be determined in the SEIS under issues 27 and 28 (and issues 24 and 25 should also be Category 2) and inclusion of "quality" in the title is not representative.

Furthermore, the idea that groundwater quality or use can be generically addressed is illogical because "Environmental conditions are different at each nuclear plant site and impacts cannot be determined generically."

This issue should be titled "Groundwater use" and should be a Category 2 issue due to differing environmental conditions and changing attitudes about how we use our limited water supply that will affect groundwater use at each nuclear plant.

NRC RESPONSE:

The NRC agrees with this comment to the extent that the term "quality" should be removed from the title of the issue; the NRC disagrees with the remainder of the comment. The proposed rule renamed the "Impacts of refurbishment on groundwater use and quality" as "Groundwater use and quality;" the issue remained classified as Category 1 (74 FR 38122, 38135). The final rule expands the "Groundwater use and quality" issue by including the impacts described in the proposed rule's Category 2 issue, "Groundwater and soil contamination," which had an impact range of small to moderate (74 FR 38122, 38135). The NRC has determined that the "Groundwater and soil contamination" issue should be reclassified as Category 1, with an impact level of small. The final rule consolidates the original Category 1 issue with the "Groundwater and soil contamination" issue and renames the consolidated issue as "Groundwater contamination and use (non-cooling system impacts)." The consolidated issue is classified as Category 1 with an impact level of small. The focus of this issue is the potential impacts to groundwater, as well as to soil and subsoil, caused by nuclear power plant licensees employing industrial practices common to all industrial sites. Specifically, the consolidated issue is concerned with impacts from spills and other non-radioactive contaminant releases. This issue does not concern impacts to groundwater caused by systems unique to a nuclear power plant, e.g., the plant's cooling system.

As described in the revised GEIS, the new consolidated Category 1 issue evaluates the impacts of the industrial use of solvents, hydrocarbons, heavy metals, or other chemicals on groundwater, soil, and subsoil at nuclear power plant sites during the license renewal term, including the use of wastewater disposal ponds or lagoons. In consideration of public comments and further evaluation by the NRC, the NRC determined that potential effects on groundwater and soil quality from common industrial practices can be addressed generically (i.e., Category 1) as such industrial practices are common to industrial facilities and not unique to nuclear power plants.

Although the commenter is correct insofar as each site may have unique environmental features, the NRC expects that each licensee will comply with all applicable Federal, state, and local permits that the licensee must obtain to operate its plant, including those that are required by the Clean Water Act and its implementing regulations. For example, licensees must obtain and comply with National Pollutant Discharge Elimination System permits and prepare associated pollution and spill prevention response plans. As described in the revised GEIS, operational experience has shown that non-radioactive contamination of groundwater at or near nuclear power plant sites, caused by spills and other releases originating from the site, has been remediated to the point where no further action was required by the applicable regulatory agency or, that the contamination has been confined to the plant site with continuing remediation in place.

With respect to refurbishment associated with license renewal, the NRC determined that such activities are not expected to require any significant dewatering that would have an incremental effect on groundwater availability over that which has already taken place. As supported by the analysis in the revised GEIS, the NRC concluded that the overall impact of industrial practices on groundwater from refurbishment associated with license renewal and, from past and current operations, is small for all nuclear power plants and not expected to change appreciably during the license renewal term. The licensee's expected adherence to the various Federal and state permit requirements, as well as the similarity of the general industrial practices and any impacts arising from such practices, are the basis to conclude that this issue is properly classified as Category 1.

No changes have been made in the final rule in response to this comment.

**11. Groundwater Use Conflicts
(Plants that Withdraw More than 100 Gallons per Minute
Including Those Using Ranney Wells)**

IDENTIFIER: NE11-7(2)-14

COMMENT:

Recommend changing “Groundwater use conflicts (plants that withdraw more than 100 gpm including those using Ranney wells)” to “Groundwater use conflicts (plants that withdraw more than 100 gpm)” since (1) the issue relates to any plants (including those with Ranney Wells) that withdraw >100 gpm of groundwater, (2) for the one plant (Grand Gulf) that does utilize Ranney Wells, Regulatory Guide DG-4015 (page 28) states that there has been little or no impact on surrounding groundwater users and should not be considered further in ERs for other sites, (3) it would be consistent with the draft updated GEIS issue concerning groundwater quality degradation associated with Ranney Wells, and (4) the Grand Gulf Ranney Wells are regulated under the State’s groundwater permitting program.

NRC RESPONSE:

The NRC agrees with this comment. As Ranney wells produce significantly more than 100 gpm, the Ranney wells issue was consolidated with the general issue of groundwater use conflicts for plants using more than 100 gpm of groundwater. The final rule amends Table B-1 by consolidating two Category 2 issues, “Groundwater use conflicts (potable and service water, and dewatering; plants that use >100 gpm)” and “Ground-water use conflicts (Ranney wells),” each with an impact level range of small to large, and names the consolidated issue, “Groundwater use conflicts (plants that withdraw more than 100 gallons per minute [gpm]).”

The NRC acknowledges that Grand Gulf is unique with regard to its use of Ranney wells at the present time. The text of Section 4.5 of RG 4.2 S1, Rev. 1 (formerly DG-4015) and the final rule were revised for consistency with the findings presented in the revised GEIS and in order to clarify that the scope of this consolidated Category 2 issue is on plants that withdraw greater than 100 gpm of groundwater rather than on the use of Ranney wells, which are used only at Grand Gulf.

12. Groundwater Quality Degradation Resulting from Water Withdrawals

IDENTIFIER: Hubbard-2-4

COMMENT:

One commenter challenged the NRC's determination classifying the proposed rule and draft GEIS issue "Groundwater quality degradation resulting from water withdrawals" as Category 1. The comment is set forth below:

It is illogical to propose that environmental conditions of the groundwater at each nuclear plant are so similar that addressing the issue can be handled with a generic evaluation. Not only does a generic impact analysis assume that environmental conditions are generically similar, but that plant design, configuration, operations and maintenance philosophies and attitudes are universally equal, and accident histories are also generically similar at all plants.

It is not representative to utilize a generic impacts analysis due to differing environmental conditions, and also not representative to assume that design and maintenance issues fit within a one-size-fits-all impacts evaluation. Operational and design conditions are different enough on many levels to preclude the use of a generic impacts evaluation. This issue should be assigned Category 2 status and evaluated on a site-specific basis.

NRC RESPONSE:

The NRC disagrees with this comment. This issue, number (24), "Groundwater quality degradation resulting from water withdrawals," as set forth in the final rule pertains to the potential for groundwater quality becoming degraded as a result of drawing water of potentially lower quality into the aquifer via groundwater pumping and saltwater intrusion. In the final rule, this issue consolidates two Category 1 issues, "Ground-water quality degradation (Ranney wells)" and "Ground-water quality degradation (saltwater intrusion)." A generic, Category 1 grouping is appropriate where operational experience reveals environmental impacts associated with a particular issue have been determined to apply to all plants with certain characteristics and a single significance level (e.g., small) has been assigned to the impacts. With respect to the impacts of water withdrawals on groundwater quality, these impacts have been found to be small at all plants and are not expected to change during the license renewal term. As such, the NRC has determined that this issue should be classified as Category 1.

Only one nuclear power plant at present, Grand Gulf, withdraws groundwater in a configuration where the use of Ranney wells induces infiltration of Mississippi River water into the alluvial aquifer. The NRC's analysis in the 1996 GEIS found that any water quality change at Grand Gulf was largely confined to the plant site and any such change would not degrade the quality of the groundwater to the extent that other current uses of the alluvial aquifer would be precluded. As supported by the analysis in the 1996 GEIS and as reviewed in the revised GEIS, the potential for inducing saltwater intrusion is considered to be of small significance at all plant sites located in estuarine (e.g., Calvert Cliffs) and coastal (e.g., Crystal River) areas because groundwater consumption from affected aquifers for use by nuclear power plants is a small fraction of groundwater use in all cases. No new information has been identified in plant-specific SEISs that would alter these conclusions. Therefore, these aspects of groundwater quality related to water withdrawals continue to be classified as Category 1.

No changes have been made in the final rule in response to this comment.

13. Groundwater Quality Degradation (Plants with Cooling Ponds in Salt Marshes)

IDENTIFIER: Hubbard-2-5

COMMENT:

One commenter challenged the NRC's determination classifying the proposed rule and draft GEIS issue "Groundwater quality degradation (plants with cooling ponds in salt marshes)" as Category 1. The comment is set forth below:

Salt marshes are one of the most biologically productive habitats on the planet. They are also more highly protected than they were decades earlier, during the original licensing process.

In addition, human expansion has led to more and more use of our groundwater for residential, agricultural, and industrial uses. There is no possible way for generic treatment of this issue to cover the differences in groundwater use from one nuclear plant to another. "Environmental conditions are different at each nuclear plant site and impacts cannot be determined generically." I fail to see how this statement does not apply to this issue. Therefore, this issue should be designated with Category 2 status.

Discussion of this issue in Table B-1 is perplexing. The discussion section consists of this statement:

"Sites with closed-cycle cooling ponds could degrade groundwater quality; however, because groundwater in salt marshes is brackish, this is not a concern for plants located in salt marshes."

Does this mean that plants in salt marshes are immune to radionuclides, or any other types of releases? or that salt marsh plants are not important? Does it mean that we do not care about groundwater quality if it is brackish? Does it mean that only salt marsh plant health was considered in the impacts evaluation?

This is one of the worst sentences ever constructed and I beg NRC staff to revise it. This sentence should not only make sense, but also provide some support to the conclusion that these impacts are SMALL.

NRC RESPONSE:

The NRC disagrees with the commenter's request to reclassify this issue as Category 2, but acknowledges that further clarification of the Table B-1 finding column entry is required. A generic, Category 1 grouping is appropriate in part where operational experience reveals environmental impacts associated with a particular issue have been determined to apply to all plants with certain characteristics and where a single significance level (e.g., small) can be assigned to the impacts. The 1996 GEIS and the revised GEIS provide the technical support for a classification of Category 1 for this issue. Issue (25), "Groundwater quality degradation (plants with cooling ponds in salt marshes)," as described in the final rule, focuses on the impacts of effluents discharged into cooling ponds located in salt marshes by nuclear power plants with closed-cycle cooling systems. Thus, this issue concerns only the potential for changing the groundwater use category of the underlying shallow and brackish groundwater due to the introduction of high dissolved solids, metals, and cooling water treatment chemicals.

Based on the analysis presented in the 1996 GEIS and reviewed in the revised GEIS, groundwater quality is not a significant concern because groundwater quality beneath salt marshes is already too poor for human use (i.e., it is non-potable water) and is only suitable for industrial use. Therefore, a Category 1 classification is appropriate for this issue. No new information has been identified in plant-specific license renewal environmental reviews that would alter this conclusion.

A separate Category 1 issue, "Radiation exposures to the public," encompasses radioactive gaseous and liquid effluent releases, including tritium from routine nuclear power plant operations. As discussed above in the response to comment "Hubbard-2-1," the NRC and EPA have radiation protection standards that limit the dose to the public from radioactive effluents released into the environment. The regulations are designed to protect the public and the environment. The NRC's review and enforcement of monitoring and reporting requirements are independent of the license renewal environmental review aspects that are the subject of this final rule. In addition, the Category 2 issue, "Radionuclides released to groundwater," covers the impacts upon groundwater resources of radionuclides inadvertently released from nuclear power plants.

As described above, the "Groundwater quality degradation (plants with cooling ponds in salt marshes)" issue is focused on the discharge of cooling water to unlined impoundments in salt marshes and its impact to groundwater. Impacts of continued operations and refurbishment associated with license renewal on the terrestrial and aquatic biota of the marsh are addressed by the following issues: "Effects on terrestrial resources (non-cooling system impacts)" (a Category 2 issue), the above described Category 2 "Radionuclides released into groundwater," to the extent that such terrestrial and aquatic biota are dependent upon or affected by the underlying groundwater, "Exposure of terrestrial organisms to radionuclides" (a Category 1 issue), "Exposure of aquatic organisms to radionuclides" (a Category 1 issue), and to the extent that any marsh species are listed as either threatened, endangered, or protected or that a critical habitat is located in a particular marsh, "Threatened, endangered, and protected species and essential fish habitat" (a Category 2 issue).

The finding column entry sentence (as set forth in the proposed rule at 74 FR at 38135), to which the commenter objects, has been revised. The final rule amends the Table B-1 finding column entry by revising it to state: "Sites with closed-cycle cooling ponds could degrade groundwater quality. However, groundwater in salt marshes is naturally brackish and thus, not potable. Consequently, the human use of such groundwater is limited to industrial purposes."

No further changes have been made in the final rule in response to this comment.

14. Groundwater and Soil Contamination

IDENTIFIER: NEI1-7(1)-4; NEI1-7(2)-4; NEI1-7(2)-9; NEI2-16(1)-15

COMMENT:

Industry commenters requested that the NRC reclassify the proposed rule's new Category 2 issue, "Groundwater and soil contamination," as Category 1, with corresponding changes to Table B-1, 10 CFR 51.53 (the NRC regulation setting forth the requirements of the license renewal applicant's environmental report), and to the guidance document, DG-4015.

An excerpt of the comment follows:

Groundwater or soil chemical contamination from industrial practices is addressed by EPA and state regulations that evaluate the impacts on the appropriate receptors. Generally, use, storage, disposal, release, and/or cleanup of solvents, hydrocarbons, and other potentially hazardous materials are governed by the Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Clean Water Act (CWA). The federal and State regulations implementing these laws protect groundwater, surface water, human health and the environment by imposing standards for hazardous materials management, including monitoring for spills and releases, reporting of monitoring results, and corrective action. The applicability of these regulatory protections to nuclear plants is independent of whether the nuclear plants are granted license renewals, and releases of hazardous materials will be addressed and remediated when they occur, regardless of whether the NRC grants a renewed operating license. Thus, the impacts from this issue are similar to plant decommissioning, where the NRC has noted that the impacts of decommissioning would occur regardless of license renewal. Appropriate environmental and health and safety reviews would occur under NRC, EPA, and State regulations, as necessary. Furthermore, best management practices would be used to reduce the probability of events that could affect groundwater quality during the current and extended license terms.

For Category 1 issues associated with the Surface Water resource, the NRC relies on best management practices employed to control spills, and discharges of metals and other chemicals being monitored in accordance with the NPDES Permit to ensure that impacts remain SMALL. These same practices and permits also apply to this issue since wastewater discharges (i.e., surface impoundments, ponds, lagoons, etc.) and associated chemical concentrations are monitored and governed in accordance with the NPDES Permit, and best management practices along with regulatory reporting and cleanup measures contained in the Spill Prevention, Control and Countermeasures Plan and the Stormwater Pollution Prevention Plan ensures that any impacts would be SMALL. This is consistent with the NRC's SMALL cumulative groundwater quality impact SEIS (Section 4.8.5) determination for Oyster Creek and Palisades which are the two of the reference plants discussed in Sections 3.5.2 (Page 3-56) and 4.5.1.2 (4-45 and 4-46) of the draft updated GEIS.

In addition, groundwater monitoring of potential releases from surface impoundments, ponds, and lagoons are required by existing EPA and State regulatory requirements—CWA and RCRA. Site specific environmental review is already conducted in the event of spills to groundwater or soil under existing federal EPA and State RCRA based regulations for solvents, hydrocarbons, heavy metals, or other chemicals. When a release occurs, appropriate site-specific environmental review is completed in accordance with EPA and/or state regulations that

adequately addresses not only site-specific conditions, but also includes contaminant specific fate and transport, and applicable potential groundwater and surface water receptors. Associated remediation (i.e., mitigation) and disposal would also be subject to a site-specific environmental review which would either be governed by regulations, permits, and/or plans that have been established to ensure that impacts are minimized. Therefore, assessing impacts under NEPA would be a redundant effort since the contamination issue would be reviewed and appropriate mitigation measures implemented to minimize impacts regardless of license renewal.

NRC RESPONSE:

The NRC agrees with this comment. The final rule amends Table B–1 by renaming the 1996 GEIS issue, “Impacts of Refurbishment on groundwater use and quality,” as “Groundwater contamination and use (non-cooling system impacts).” The final rule further expands the scope of this issue to include the impacts analyzed in the proposed rule’s Category 2 issue, “Groundwater and soil contamination,” (see 74 FR 38122, 38135). The revised GEIS and final rule classify the “Groundwater contamination and use (non-cooling system impacts)” issue as Category 1.

While originally proposed as a new, separate Category 2 issue in the proposed rule, “Groundwater and soil contamination,” further evaluation by the NRC and consideration of public comments revealed that potential effects on groundwater and soil quality from common industrial practices can be addressed generically (i.e., Category 1) as such industrial practices are common to industrial facilities and not unique to nuclear power plants. As supported by the analysis in the revised GEIS, the NRC concludes that the overall impact of industrial practices on groundwater use and quality from past and current operations is small for all nuclear power plants and not expected to change appreciably during the license renewal term.

The 1996 GEIS issue and the proposed rule issue were consolidated as both issues consider common industrial activities and aspects of continued operations of a nuclear power plant (not directly related to cooling system effects) and their potential for groundwater use and quality impacts from spills and other contaminant releases. As consolidated, this new Category 1 issue evaluates the impacts of the industrial use of solvents, hydrocarbons, heavy metals, or other chemicals on groundwater, soil, and subsoil at nuclear power plant sites during the license renewal term; the issue also considers the impacts resulting from the use of wastewater disposal ponds and lagoons.

In addition to amending Table B–1 as described above, the proposed rule addition of 10 CFR 51.53(c)(3)(ii)(O) was not made in the final rule. Section 4.0 of RG 4.2 S1, Rev. 1 (DG–4015) was also revised accordingly.

IDENTIFIER: NEI1-7(2)-15

COMMENT:

Recommend the following revision to the finding for the issue labeled “Groundwater and soil contamination” since the draft updated GEIS Category 1 issue labeled “Groundwater quality degradation (Plants with cooling ponds in salt marshes)” has already generically determined that ponds located in salt marshes are not expected to degrade groundwater quality.

*SMALL or MODERATE. Industrial practices involving the use of solvents, hydrocarbons, heavy metals, or other chemicals and unlined wastewater lagoons **at inland sites** have the potential to contaminate site groundwater, soil, and subsoil. Contamination is subject to State and Environmental Protection Agency regulated cleanup and monitoring programs.*

NRC RESPONSE:

The NRC disagrees with this comment. The applicability of this issue is not limited to inland sites. Please see the response to comments NEI1-7(1)-5, NEI1-7(2)-4, NEI1-7(2)-9, and NEI2-16(1)-15.

15. Radionuclides Released to Groundwater

IDENTIFIER: NEI1-7(1)-3; NEI1-7(2)-10

COMMENT:

One industry commenter objected to the proposed rule adding a new Category 2 issue, "Radionuclides released to groundwater," to Table B-1. In a related comment, this industry commenter objected to the proposed rule's addition of 10 CFR 51.53(c)(3)(ii)(Q), which would require license renewal applicants to assess the impacts of inadvertent releases of radionuclides into groundwater (this paragraph is now 10 CFR 51.53(c)(3)(ii)(P) in the final rule). The industry commenter requested that this issue be reclassified as a Category 1 issue in Table B-1 and accordingly, that the final rule not add paragraph (Q) to 10 CFR 51.53(c)(3)(ii). An excerpt of the comment is set forth below:

The issue of "Radionuclides released to groundwater" was not addressed in the 1996 GEIS, but was added to the draft updated GEIS based on industry events in which an unplanned or unmonitored release of radioactive liquids to the environment has resulted in low but detectable levels of radionuclides in groundwater. In all but one instance, the contamination remained on-site, and all of the events were well below regulatory limits. None of the inadvertent releases presented an impact on public health, safety, or the environment.

Industry submits that sufficient data are available to classify the issue of radionuclides released to groundwater as Category 1. This is supported by the following statement from the NRC's Liquid Release Lessons Learned Task Force Final Report issued on Sept. 1, 2006: "Although there have been a number of industry events where radioactive liquid was released to the environment in an unplanned and unmonitored fashion, based on the data available, the task force did not identify any instances where the health of the public was impacted."

*As a result of the industry events, the nuclear industry voluntarily implemented the industry-wide Ground Water Protection Initiative (**Industry Ground Water Protection Initiative—Final Guidance Document: NEI 07-07 [Final], 2007**) to ensure timely detection and effective response to situations involving inadvertent radiological releases to groundwater and to enhance licensee communications with their stakeholders about these situations. The early detection of contamination, typically through on-site monitoring wells, allows licensees to take actions as necessary to prevent the off-site migration of licensed radioactive material. This voluntary initiative assists the industry in implementing programs for early detection and allows the industry to effectively mitigate releases, once they occur, to be protective of drinking water supplies and associated human health. The NRC is in the process of reviewing licensees' implementation of the industry-wide Ground Water Protection Initiative as part of its radiation protection program oversight (refer to NRC Inspection Manual—Temporary Instruction 2515/173). On-site groundwater monitoring data are reported to the NRC in either the Annual Radioactive Effluent Release or Annual Radiological Environmental Operating Reports.*

Considering the information presented above, it is recommended that the revised GEIS develop a generic impact analysis based on the following:

- Impacts of radioactive material releases to groundwater can be adequately and appropriately addressed for all nuclear power plants in the updated GEIS by describing the process by which an inadvertent release of radiological material to groundwater is already being dealt with at all nuclear plants through the licensee's implementation of the Industry Ground Water Protection Initiative and ongoing Offsite Dose Calculation Manual updates, Annual Radioactive Effluent Release Reports, Annual Radiological Environmental*

Operating Reports, and NRC oversight. Licensee implementation programs include periodic reviews of the site's potential vulnerability for an inadvertent leak to occur due to equipment failure or human error, an understanding of the site's hydrology and geology, early detection through ground water monitoring, and reporting of the data to the NRC.

- *For those instances when a release of radioactive material to groundwater does occur at a nuclear power plant, a site-specific assessment is performed in accordance with the plant's groundwater protection program. Such assessments address site-specific conditions, including site-specific contaminants and potential receptors, and necessary actions to prevent off-site migration. Accordingly, the generic impact analysis should acknowledge that, regardless of whether the NRC renews licenses for nuclear power plants, existing regulations and performance standards already ensure that the environmental impacts are assessed in the event of a radioactive material spill or leak to groundwater or soil. Examples of such existing regulations and standards are listed below*
 1. *NEI 07-07 (Industry Groundwater Protection Initiative) guidance document.*
 2. *Revisions to Regulatory Guide 4.1 (Radiological Environmental Monitoring Programs)*
 3. *NRC Inspection Manual—Temporary Instruction 2515/173*
 4. *Revisions to Regulatory Guide 4.21 (Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning*
 5. *Revisions to Regulatory Guide 1.21 (Measuring, Evaluating and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste)*
 6. *EPRI Report 1016099 "Groundwater Protection Guidelines for Nuclear Power Plants" 2008*

The above-described level of controls now imposed on unplanned or unmonitored releases of radionuclides to the environment from nuclear power plants and the NRC's regulatory oversight justifies a conclusion that impacts from the issue "Radionuclides released to groundwater" would be SMALL, and that the issue designation should be changed from "Category 2" to "Category 1." These changes would be consistent with the NRC's approach of designating as "Category 1" other issues that are generically evaluated in the updated GEIS and found to have small impacts as a result of monitoring and regulatory controls. Examples include storage and disposal of low-level radiological waste, spent fuel, high-level waste, and mixed waste. For these issues, the GEIS relies on regulatory controls and permissible levels, which are outlined in regulations and implemented by the nuclear industry through operational monitoring programs, to conclude that impacts associated with each issue would be SMALL for all plants, and hence, that the issues are classified as "Category 1."

NRC RESPONSE:

The NRC disagrees with this comment. As described below, the commenter does not provide adequate justification to support reclassifying the "Radionuclides released to groundwater" issue as Category 1, and consequently, there is no reason to revise the final rule to remove 10 CFR 51.53(c)(3)(ii)(P).

This new, Category 2 issue evaluates the potential contamination and degradation of groundwater resources resulting from inadvertent discharges of radionuclides into groundwater

from nuclear power plants. Within the past several years, there have been numerous events at power reactor sites which involved unknown, uncontrolled, and unmonitored releases of radionuclides into the groundwater. As described in the revised GEIS, the majority of these inadvertent radionuclide releases have involved tritium. However, other radionuclides, such as cesium and strontium, have also been inadvertently released. These inadvertent releases have been caused by leakage from spent fuel pools and buried piping, and in one case, the failure of pressure relief valves on a liquid effluent discharge line.

In 2006, the NRC's Executive Director for Operations chartered a Task Force to conduct a lessons-learned review of these incidents. On September 1, 2006, the Task Force issued its report: "Liquid Radioactive Release Lessons Learned Task Force Report" (ADAMS Accession No. ML062650312). The report concluded that although there were numerous events where radioactive liquid was released to the groundwater in an unplanned, uncontrolled, and unmonitored fashion, based on the data available, the task force did not identify any instances where public health and safety was adversely impacted. The report, however, did not evaluate the impacts to the groundwater resources caused by such inadvertent radionuclide releases. The evaluation of such impacts is the purpose of this new Category 2 issue.

The task force report identified that the potential exists for unplanned, uncontrolled, and unmonitored releases of radioactive liquids to migrate offsite into the public domain. The following elements collectively contribute to this conclusion:

- Some of the power plant components that contain radioactive fluids that have leaked were constructed to commercial standards, in contrast to plant safety systems that are typically fabricated to more stringent requirements. The result is a lower level of assurance that these types of components will be leak proof over the life of the plant.
- Some of the components that have leaked were not required by the NRC requirements to be subject to surveillance, maintenance, or inspection activities by the licensee. This increases the likelihood that leakage in such components can go undetected. Additionally, relatively low leakage rates may not be detected by plant operators, even over an extended period of time.
- Portions of some components or structures are physically not visible to operators, thereby reducing the likelihood that leakage will be identified. Examples of such components include buried pipes and spent fuel pools.
- Leakage that enters the ground below the plant may be undetected because there are generally no NRC requirements to monitor the groundwater onsite for radioactive contamination.
- Contamination in groundwater onsite may migrate offsite undetected. Although the power plant operator is required by the NRC regulations to perform offsite environmental monitoring¹¹, the sampling locations are typically in the vicinity of the routine effluent discharge point into the environment, not around plant systems, piping, and tanks containing radioactive liquids.

Further, the monitoring data collected by each plant for the groundwater protection program is not required by regulation to be included in the annual reports cited by the commenter. The exception to this is if a radioactive release was evaluated as a radioactive effluent that had the potential to cause a radiation dose to a plant worker or a member of the public.

¹¹ Appendix A to 10 CFR Part 50, Criterion 64

The commenter asserts that existing regulations and performance standards already ensure that the environmental impacts of radionuclide releases to groundwater are adequately assessed. The commenter lists NEI 07-07, various NRC regulatory guides, and NRC inspection manual, and an EPRI report.

The industry's groundwater protection initiative, as detailed in NEI 07-07, "*Industry Ground Water Protection Initiative—Final Guidance Document*," is an industry-initiated program designed to help each plant improve management of situations involving inadvertent radiological releases that migrate into groundwater. The groundwater protection program described in NEI 07-07 is a voluntary program not required by the NRC regulations and thus, not specifically subject to regulatory enforcement. Additionally, Temporary Instruction 2515/173 was a "one time" review of each plant's implementation of the guidance in NEI 07-07. The temporary instruction does not constitute a continuing, periodic inspection of the program that verifies compliance with the NRC regulations on radioactive effluents and inadvertent releases. Currently, the NRC periodically reviews each plant's groundwater protection program for consistency with the guidance in NEI 07-07 during its inspections. However, as previously stated, the guidance is not subject to enforcement. The NRC does not, at this time, have adequate information about each nuclear power plant to make a generic conclusion about this issue. Therefore, the issue remains as Category 2, and each applicant for license renewal will be required to submit site-specific information on its groundwater protection program in its environmental report.

The NRC Regulatory Guides (RGs) provide guidance to licensees on acceptable methods for complying with NRC regulations. The comment refers to revisions to RGs 1.21, 4.1, and 4.21. A RG is not a regulation and as such, licensees are not required to comply with an NRC Regulatory Guide. Similarly, the EPRI document is a good example of industry working to craft its own guidance and programs to solve a problem, but as with NEI 07-07, it is not a regulatory requirement.

Another aspect encountered by the NRC due to the inadvertent releases has been the high level of concern expressed on the part of the public coupled with significant media coverage. Even at the very low radiation levels caused by the events, local government officials and members of Congress have demanded that the NRC take action to stop these events. A high level of public controversy is a basis under NEPA to take a "hard look" at a particular issue.

The NRC cannot rely on a voluntary initiative or industry guidance as a basis to ensure that the nuclear power industry will monitor inadvertent radionuclide releases into groundwater and have adequate information available for the NRC to determine whether the issue does or does not have an adverse impact on groundwater resources.

On the basis of the available information and experience with these leaks, the NRC concludes that the impact to groundwater quality from the release of radionuclides could be small or moderate, depending on the magnitude of the leak, the radionuclides involved, and the response time of plant personnel to identify and stop the leak. As there are currently no NRC regulations that would require the timely identification and termination of an inadvertent leak of radionuclides, there is no information available which would enable the NRC to make a generic assessment. Therefore, the issue remains as Category 2, and each applicant for license renewal will be required to submit site-specific information on its groundwater protection program in its environmental report.

No changes have been made in the final rule in response to this comment.

IDENTIFIER: NEI2-16(1)-16

COMMENT:

An industry commenter objected to the proposed rule's inclusion of a new Category 2 issue, "Radionuclides released to groundwater." An excerpt of the comment is set forth below:

Significantly, the Commission recently addressed this same issue in its proposed update to the Waste Confidence Decision and Rule. [commenter footnote 1]. In both the Proposed Update and SECY-09-0090, NRC identified several incidents of groundwater contamination originating from spent fuel pools. But after an analysis of the actions taken by the NRC Staff in response to these incidents, the NRC appropriately concluded:

While unmonitored unplanned releases continue to require the NRC's and licensees' attention, the NRC is confident that this issue will be adequately addressed through continued regulatory oversight of operating and new nuclear reactors and enhanced through the NRC's continued implementation of the Task Force recommendations. Therefore, the NRC continues to have assurance that no significant environmental impacts or safety concerns will result from extended storage in spent fuel pools.

SECY-09-0090, End. 1, at 113; 73 Fed. Reg. 59,565-566 (emphasis added). [commenter footnote 2].

NEI recognizes that operation of a nuclear power plant during the license renewal period may involve sources of inadvertent releases other than spent fuel pool storage, which was the exclusive topic of the waste confidence update. Thus, consideration of inadvertent releases as a Category 1 issue resulting in a "small" generic impact may be appropriate. But, given the conclusions in the Proposed Update and SECY-09-0090, NEI believes that the NRC has not adequately explained why any such additional sources of inadvertent releases (other than spent fuel pool storage) warrant inclusion of this issue in the GEIS and the proposed rule. Indeed, the only source of such releases specifically discussed in the Federal Register notice is spent fuel pools. NRC should clearly explain its basis for including this issue in the GEIS, in light of the conclusions drawn in the Proposed Update and SECY-09-0090. [commenter footnote 3].

Further, NEI believes that requiring consideration of this issue on a site-specific basis (i.e., Category-2), as well as NRC's conclusion that impacts of inadvertent releases may be "moderate," are inconsistent with the NRC's treatment of this issue in the Proposed Update and SECY-09-0090. Specifically, it is inconsistent to conclude that unmonitored and unplanned releases will not affect the NRC's generic NEPA finding that no significant environmental impacts will result from extended storage of spent fuel during the post-operation period, while here concluding that these same unmonitored and unplanned releases require site-specific evaluation during operation (i.e., during the license renewal period) and may result in "moderate" impacts.

If the NRC decides to consider this issue in the GEIS, then NEI recommends that it be designated as a Category 1 issue with a "small" impact finding. The technical basis for this conclusion is included in NEI's technical comments, and is consistent with the NRC'S treatment of this issue in the Proposed Update and SECY-09-0090. (See Attachment 1, NEI technical comments, pp. 8-9.) Moreover, we believe the NRC should provide a clear explanation of why the issue warrants inclusion at all, given the agency's conclusions regarding inadvertent releases in the Proposed Update and SECY-09-0090. In sum, NEI requests that NRC clarify its 'rationale for adding this new issue, designate it as a Category 1 issue with a "small" impact

finding, or omit it from the revised GEIS.

[Commenter footnote 1: See Final Update of the Commission's Waste Confidence Decision, SECY-09-0090, Encl. 1 at 110-113 (June 15, 2009) (SECY-09-0090); Waste Confidence Decision Update, 73 Fed. Reg. 59,551, 59,565-59,566 (Oct. 9, 2008) (Proposed Update).]

[Commenter footnote 2: Although the Commission votes on SECY-09-0090 call for the waste confidence update to be re-noticed, the Commissions did not take issue with the NRC Staff's conclusions regarding inadvertent, releases in their publicly available vote sheets.]

[Commenter footnote 3: One might surmise that public opinion may have played a significant role in the decision to classify this as a Category 2 issue. The NRC states: "Another factor in adding this new Category 2 issue is the level of public concern associated with such inadvertent releases of radionuclides into groundwater." NRC speculates that the impacts could be small or moderate. 74 Fed. Reg. 38,123. As discussed above, the standard for including a new issue in the GEIS is whether it is within the scope of NEPA and NRC license renewal, including whether it is significant and reasonably foreseeable, not whether there is public interest regarding the issue.]

NRC RESPONSE:

The NRC disagrees with this comment. The commenter asserts that "it is inconsistent to conclude that unmonitored and unplanned releases will not affect the NRC's generic NEPA finding that no significant environmental impacts will result from extended storage of spent fuel during the post-operation period, while here concluding that these *same* unmonitored and unplanned releases require site-specific evaluation during operation (i.e., during the license renewal period) and may result in "moderate impacts" (emphasis added). The commenter's assertion is incorrect. This new Category 2 issue covers inadvertent releases of radionuclides from any source at the plant (e.g., buried pipes), not just those from the spent fuel pool. In addition, the focus of the issue is the impact of all of these inadvertent releases upon one specific resource, namely, groundwater. Within the past several years, there have been numerous events at power reactor sites which involved unknown, uncontrolled, and unmonitored releases of radionuclides into the groundwater. The issue is relevant to license renewal because these events have shown that components and piping at nuclear power plants have the potential to leak radioactive materials into groundwater and degrade its quality. In this regard, the majority of reported incidents of leaks into groundwater have been from leaking pipes. The number of these events and the high level of public controversy have made this issue one that the NRC believes needs a "hard look" as required by NEPA.

Regarding the magnitude of impact, the NRC bases its determination of small to moderate impact on a review of existing plants that had inadvertent releases of radioactive liquids. Whether the impact would be small or moderate would depend upon the magnitude of the leak, the radionuclides involved, and the response time of plant personnel to identify and stop the leak. As the leaks are not planned, and there are no NRC regulations that would require the timely identification and termination of a leak, there is insufficient information available that would enable the NRC to make a generic assessment. Although the NRC expects impacts for all plants to be within this small to moderate range, a conclusion of large impact would not be precluded for a future license renewal review based on new and significant information if the data supports such a conclusion. As reflected in the revised final GEIS and this final rule, "Radionuclides released to groundwater" remains a Category 2 issue. See the response to comments NEI1-7(1)-4 and NEI2-16-2, *et al* for further details.

No changes have been made in the final rule in response to this comment.

16. Exposure of Terrestrial Organisms to Radionuclides

IDENTIFIER: NEI2-16(1)-9

COMMENT:

An industry commenter objected to the inclusion of the new Category 1 issue “Exposure of terrestrial organisms to radionuclides” in the proposed rule. Excerpts from the comment are set forth below:

In terms of the issue's significance, the proposed rule does not indicate why the potential impact of the exposure of terrestrial organisms to radionuclides was not evaluated in the 1996 GEIS and what events have prompted NRC to propose inclusion of the issue now. (In this regard, NRC concludes that the impact of radionuclides on terrestrial biota from past and current operations would be small for all nuclear power plants and would not be expected to change appreciably during the license renewal term.)

In sum, the only rationale offered for adding the new issue to the GEIS is that an unknown number of members of the public and unspecified Federal and State agencies have raised the issue in some license renewal review(s), but this does not provide adequate support for including it as a new issue in the GEIS. As discussed above, the standard for including a new issue in the GEIS is whether it is within the scope of both NEPA and license renewal, including whether it is significant and reasonably foreseeable. If the standard were whether the issue has been raised during previous reviews, then there really would be no standard at all. For all of these reasons, this issue need not and should not be included as a new issue in the GEIS, absent sufficient justification. NEI requests that NRC either revise the proposed rule to provide its rationale for adding this new issue or omit it from the revised GEIS.

NRC RESPONSE:

The NRC disagrees with this comment. Issues identified by members of the public and other stakeholders, including Federal and State agencies, during site-specific environmental reviews may raise legitimate human health and environmental matters. The NRC has conducted over 40 license renewal actions since the issuance of the 1996 GEIS, and these 40 plus license renewal actions, as well as studies and other literature reviewed by the staff, lessons learned in conjunction with those site-specific license renewal actions, and comments received from stakeholders during scoping periods or on the draft SEIS, serve as an adequate basis to identify additional issues for consideration in the revised GEIS. The fact that a given issue was not included in the 1996 GEIS is not a bar to include the issue in the revised GEIS. Clearly, it is well within the NRC's discretion to add this issue. Please see the response to NEI comment NEI2-16-2, *et al* for further details.

Furthermore, examination of the potential impacts of radioactive materials in the environment is clearly within the scope of license renewal environmental reviews as all operating commercial nuclear power plants routinely release radioactive gaseous and liquid effluents into the environment under controlled conditions in accordance with the NRC radiation protection standards. As detailed in the GEIS, terrestrial organisms may be exposed to radionuclides released from nuclear power plants via a number of pathways including radionuclide particulates from plant vents, in liquid effluent discharged that can be taken up by terrestrial plant species including both upland species and wetland species, and also by exposure to ionizing radiation from radionuclides through direct contact with water or other media, inhalation,

or ingestion of food, water, or soil. The NRC reviewed an extensive body of literature in this regard. Such new research, findings, and other information were considered when the significance of impacts associated with license renewal was being evaluated.

Although the NRC's review has indicated that impacts related to exposure of terrestrial organisms are likely to be small, exposure is considered reasonably foreseeable and warrants examination. Therefore, the NRC has determined that such impacts should be evaluated in its SEIS in consideration of any new and significant information that could change the conclusion in the GEIS with regard to this issue. In addition, the NRC believes that inclusion of this issue in the GEIS fulfills its responsibilities under 10 CFR 51.70(b) to independently evaluate and be responsible for the reliability of all information used in its SEISs and to provide evidence that the necessary environmental analyses have been conducted.

No changes have been made in the final rule in response to this comment.

17. Cooling System Impacts on Terrestrial Resources (Plants with Once-Through Cooling Systems or Cooling Ponds)

IDENTIFIER: NEI1-7(2)-5

COMMENT:

Draft updated GEIS Issue 31 involves cooling system impacts on terrestrial resources as it relates to plants with once-through cooling systems or cooling ponds. However, this issue would also appear to apply to plants with cooling towers since it involves several of the impacts such as contaminants in surface water.

NRC RESPONSE:

The NRC disagrees with this comment to the extent that it implies that the issue, "Cooling system impacts on terrestrial resources (plants with once-through cooling systems or cooling ponds)," (now issue (30) in the final rule) includes impacts of cooling tower operations within its scope. As noted in Section 4.6.1.1 of the revised GEIS, the issue "Cooling system impacts on terrestrial resources (plants with once-through cooling systems or cooling ponds)," is applicable to plants with once-through cooling systems and cooling ponds, typically with low levels of consumptive water use. The impacts of cooling tower operations on terrestrial resources are covered by "Cooling tower impacts on vegetation (plants with cooling towers)," a consolidated Category 1 issue (listed as issue (32) in the proposed rule; now issue (31) in the final rule), and by "Water use conflicts with terrestrial resources (plants with cooling ponds or cooling towers using makeup water from a river)," a new Category 2 issue covering impacts on terrestrial resources from plants with cooling ponds or cooling towers, typically with high levels of consumptive water use and using makeup water from a river (listed as issue (34) in the proposed rule; now issue (33) in the final rule).

No changes have been made in the final rule in response to this comment.

18. Water Use Conflicts with Terrestrial Resources (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River with Low Flow)

IDENTIFIER: NEI2-16(1)-17

COMMENT:

An industry commenter objected to the inclusion of two new Category 2 issues in the proposed rule, “Water use conflicts with terrestrial resources (plants with cooling ponds or cooling towers using makeup water from a river with low flow)”¹² and “Water use conflicts with aquatic resources (plants with cooling ponds or cooling towers using makeup water from a river with low flow).”¹³ An excerpt from the comment is set forth below:

The proposed rule does not indicate why the potential impacts of water use conflicts with terrestrial resources (or water use conflicts with aquatic resources) were not evaluated in the 1996 GEIS and what events have prompted NRC to now propose inclusion of these two issues in the revised GEIS. Additionally, both of these new issues are couched in remote and speculative terms, since NRC states: “Such impacts could occur....” See 74 Fed. Reg. 38,123; 74 Fed. Reg. 38,125. For all of these reasons, this issue need not and should not be included as a new Category 2 issue in the GEIS, absent sufficient justification. For all of these reasons, neither of these issues should be included as new Category 2 issues in the GEIS, absent sufficient justification. NEI requests that NRC either revise the proposed rule to clarify its rationale for adding each new issue or omit the issues from the revised GEIS.

NRC RESPONSE:

The NRC disagrees with this comment. “Water use conflicts with terrestrial resources (plants with cooling ponds or cooling towers using make-up water from a river)” and “Water use conflicts with aquatic resources...” as listed in the final rule, are not entirely new issues. These issues were established to separate those associated and secondary impacts on stream aquatic communities and on terrestrial resources in riparian (streamside) communities, respectively, from the direct impacts that cooling water withdrawals and consumptive use has on the availability of surface water for other users and maintenance of stream flow. The latter is the focus of the issue, “Surface water use conflicts (plants with cooling ponds or cooling towers using make-up water from a river),” in the final rule. These differences are noted in the revised GEIS. However, in the 1996 GEIS, these differing aspects of environment impact were considered together under the Category 2 issue, “Water use conflicts (plants with cooling towers and cooling ponds using make-up water from a small river with low flow).”

The NRC disagrees with the assertion that the proposed rule uses “remote and speculative” terms. The word “could,” of and by itself, does not denote a remote and speculative issue. Finally, the fact that an issue was not identified, or in this case further delineated, is not a bar to including a new issue, or revising or dividing an existing issue, in the revised GEIS. In this case,

¹² The final rule renames the issue “Water use conflicts with terrestrial resources (plants with cooling ponds or cooling towers using makeup water from a river).”

¹³ The final rule renames the issue “Water use conflicts with aquatic resources (plants with cooling ponds or cooling towers using makeup water from a river).”

the rationale has been provided above. Please see the response to NEI comment NEI2-16-2, *et al* for further details.

No changes have been made in the final rule in response to this comment.

19. Transmission Line Right-of-Way (ROW) Management Impacts on Terrestrial Resources

IDENTIFIER: NEI1-7(2)-16

COMMENT:

Transmission Line ROW Management Impacts on Terrestrial Resources – Modify Table B-1 to reflect that the draft updated GEIS indicates that the only transmission lines to be considered in license renewal NEPA reviews are those transmission lines that would not remain operable if the NRC did not renew a nuclear plant’s operating license, and such transmission lines run from the plant’s turbine generator building to a switching station or substation, typically located on the power plant site, from which electricity is transferred into the regional electrical grid. Hence, impacts on terrestrial resources are unlikely because the onsite environments through which in-scope ROWs pass would not typically include terrestrial resources.

NRC RESPONSE:

The NRC agrees with this comment. The final rule amends Table B-1 by appending a footnote to the issue column entry in Table B-1 for the “Transmission line right-of-way (ROW) management impacts on terrestrial resources” issue and to the issue column entries for several other issues; the footnote prescribes the extent to which transmission line ROWs are in-scope for the revised GEIS, and any license renewal environmental reviews associated with an applicant’s environmental report or an NRC-prepared SEIS. Footnote number 4 to Table B-1 states “This issue applies only to the in-scope portion of electric power transmission lines which are defined as transmission lines that connect the nuclear power plant to the substation where electricity is fed into the regional power distribution system and transmission lines that supply power to the nuclear plant from the grid.”

**20. Electromagnetic Fields on Flora and Fauna
(Plants, Agricultural Crops, Honeybees,
Wildlife, Livestock)**

IDENTIFIER: NE11-7(2)-17
COMMENT: <i><u>Electromagnetic Fields on Flora and Fauna (Plants, Agricultural Crops, Honeybees, Wildlife, Livestock)</u>—Modify Table B-1 to reflect that the draft updated GEIS indicates that the only transmission lines to be considered in license renewal NEPA reviews are those transmission lines that would not remain operable if the NRC did not renew a nuclear plant's operating license, and such transmission lines run from the plant's turbine generator building to a switching station or substation, typically located on the power plant site, from which electricity is transferred into the regional electrical grid. Hence, impacts of electromagnetic fields on flora and fauna (plants, agricultural crops, honeybees, wildlife and livestock) are unlikely because the onsite environments through which in-scope ROWs pass would not typically contain significant flora and fauna.</i>
NRC RESPONSE: The NRC agrees with the comment. The final rule amends Table B-1 by appending a footnote to the issue column entry in Table B-1 for the "Electromagnetic fields on flora and fauna (plants, agricultural crops, honeybees, wildlife, livestock)" issue. See the response to comment NE11-7(2)-16.

21. Impingement and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)

IDENTIFIER: NEI1-7(2)-6

COMMENT:

Based on the draft updated GEIS (page 4-80, lines 38-40)¹⁴ the NRC stated that the entrainment of phytoplankton and zooplankton was evaluated in the 1996 GEIS and was categorized as a Category 1 issue for all cooling systems. Therefore, in the final rule, the NRC should clarify that the Category 1 portion (entrainment of phytoplankton and zooplankton) of the Impingement and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds), need not be assessed absent new and significant information.

NRC RESPONSE:

The final rule retains the 1996 GEIS issue, "Entrainment of phytoplankton and zooplankton," as a stand-alone Category 1 issue, renamed "Entrainment of phytoplankton and zooplankton (all plants)." The final rule's Statements of Consideration make clear that license renewal applicants need not assess Category 1 issues in their environmental reports absent new and significant information.

The proposed rule had consolidated two Category 2 issues, "Entrainment of fish and shellfish in early life stages (for plants with once-through cooling and cooling pond heat dissipation systems)" and "Impingement of fish and shellfish (for plants with once-through cooling and cooling pond heat dissipation systems)" with the Category 1 issue, "Entrainment of phytoplankton and zooplankton" (74 FR 38124, 38136). Under the proposed rule, the consolidated issue would have been a Category 2 issue, with an impact range of small to large. Subsequent to the publication of the proposed rule, the NRC determined that such consolidation would have the effect of making "Entrainment of phytoplankton and zooplankton (all plants)," which is an issue generic to all plants (Category 1), a site-specific issue (Category 2). As there is no basis to support making the "Entrainment of phytoplankton and zooplankton (all plants)" a site-specific issue, the NRC determined not to adopt the proposed rule change. Instead, only the two Category 2 issues were consolidated.

IDENTIFIER: NEI1-7(2)-18

COMMENT:

Impingement and Entrainment of Aquatic Organisms (Plants with Once-through Cooling Systems or Cooling Ponds)—This issue should be designated as Category 1 rather than Category 2 because the provisions of Section 316(b) of the Clean Water Act, which is implemented at all nuclear plants by EPA and authorized State agencies, assure that the effects of impingement and entrainment are mitigated sufficiently to protect the balance of indigenous populations of fish and shellfish at nuclear power plants, regardless of the technology used for

¹⁴ Note: commenter references to the revised GEIS are to the version that was issued along with the proposed rule in July 2009.

condenser cooling. The NRC's responsibility under NEPA for independent assessment of environmental impacts should not require duplicate review of the EPA and State agency decisions in NPDES permitting actions.

NRC RESPONSE:

The NRC disagrees with this comment. Although NPDES permitting may mitigate the potential impingement and entrainment effects of operations, not all plants undergoing license renewal have had recent reviews of their NPDES permits. In addition, many plant- and site-specific operational, physical, and biological aspects could influence impacts.

As explained in the 1996 GEIS, impingement and entrainment is more of a concern at nuclear plants that have once-through cooling because these plants require a larger amount of water than plants that operate under closed-cycle. For example, impingement monitoring at the Palisades nuclear power plant in Michigan demonstrated this difference. In 1972, when the plant used once-through cooling, 654,000 fish were impinged yearly at a water withdrawal rate of 400,000 gpm. In 1976, cooling towers were added to the plant, and it began operating as a closed-cycle plant. Intake withdrawal rate was reduced to 78,000 gpm, and impingement dropped to 7200 fish per year. For the Pilgrim plant in Massachusetts, the NRC concluded that impingement during continued operation of the plant would have a moderate impact on the Jones River population of the rainbow smelt (*Osmerus mordax*) on the basis of an observed decline of that population, uncertainty about the stock's status, impingement rates, and low impingement survivability. Impingement had a small to moderate impact on all other species. As another example, the NRC concluded that impingement during continued operation of the Wolf Creek plant in Kansas could have small to moderate impacts at the makeup water screen house during periods when river water levels were low, because fish would have less available habitat to use as a refuge and would likely be exposed to greater pumping frequency and volume removals from the Neosho River. See the revised GEIS, Section 4.6.1.2., for further details.

Licensees have employed various methods to reduce impingement and entrainment, including returning impinged fish to the water source, bypassing fish at the intake screens, and preventing the approach of fish to the intake area. Various deflection methods that have been used at power plants to reduce impingement include physical barriers, visual stimuli (e.g., air-bubble screens and static or strobe lights), water velocity and pressure changes, electrical shocks, and sound. These methods have variable effectiveness.

The NRC acknowledges that licensees must comply with section 316(b) of the Clean Water Act. The NRC regulations, however, clearly state that the "environmental impact of the proposed action will be considered in the analysis with respect to matters covered by environmental quality standards and requirements irrespective of whether a certification or license from the appropriate authority has been obtained."¹⁵ The NRC regulations also state that compliance with the environmental requirements of the Clean Water Act "is not a substitute for, and does not negate the requirement for the NRC to weigh all environmental effects of the proposed action,...and to consider alternatives to the proposed action that are available for reducing adverse effects."¹⁶ As a consequence, it is considered important that up-to-date evaluations of impingement and entrainment be made and that current and historic information be reviewed to

¹⁵ 10 CFR 51.71(d).

¹⁶ 10 CFR 51.71(d), n. 3.

evaluate the level of effects to aquatic resources from license renewal.

Given the above NRC regulation, the high volumes of fish kills and injuries resulting from the use of once-through cooling systems or cooling ponds, the variability of the different species affected by impingement and entrainment at each plant (ranging from fish and shellfish at several plants; to sea turtles at Diablo Canyon and San Onofre on the Pacific coast and at Salem, Oyster Creek, Brunswick, St. Lucie, and Crystal River on the Atlantic coast; to various species of waterfowl at Cook, Point Beach, and Nine Mile Point; to the American crocodile at Turkey Point; and to the West Indian manatee at both Turkey Point and St. Lucie), and to the different methods employed at each plant in an attempt to reduce impingement and entrainment, the NRC has determined that it cannot make a generic determination (Category 1 finding) as to this issue. As such, the NRC has classified this issue as Category 2.

No changes were made to the GEIS or this final rule in response to this comment.

22. Thermal Impacts on Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)

IDENTIFIER: NEI1-7-1; NEI1-7(1)-2; NEI1-7(2)-2; NEI1-7(2)-7; NEI1-7(2)-8;
NEI2-16(1)-18; OBIL-Entergy-3

COMMENT:

Industry commenters objected to the NRC's consolidation of four 1996 GEIS Category 1 issues, "Cold shock (for all plants)," "Thermal plume barrier to migrating fish (for all plants)," "Distribution of aquatic organisms (for all plants)," and "Premature emergence of aquatic insects (for all plants)," with the 1996 Category 2 issue, "Heat shock (for plants with once-through and cooling pond heat dissipation systems)." The proposed rule renamed the consolidated issue as "Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)" and classified it as Category 2, with an impact range of small to large, a classification to which the commenter also objected (see 74 FR 38124, 38136). The commenter requests that these issues be reclassified as Category 1.

The commenters assert that the analysis in the revised GEIS does not support the Category 2 classification. Generally, the commenter asserts that a plant's compliance with its NPDES permit should be *prima facie* evidence of a small thermal impact on aquatic organisms and thus, the issue should be classified as Category 1. Specifically, the commenter argues that the revised GEIS analysis relies upon the York et al study which concludes that the thermal discharges from the San Onofre Nuclear Generating Station (SONGS) and the Diablo Canyon Nuclear Power Plant in California have had significant impacts on aquatic habitats. An excerpt from one comment states:

*The draft updated GEIS (page 4-88, lines 36-38)¹⁷ cites York et al. (2005) [commenter footnote 1] as the basis to assert that the thermal discharges from the San Onofre and Diablo Canyon plants in California have had significant impacts on aquatic habitats. The draft updated GEIS concludes without any plant-specific data or further analysis, that since neither of these plants has requested renewal of their operating licenses as of this date, [commenter footnote 2], "...thermal discharges **could** be a concern..." (emphasis added) and, ultimately, that there may be plants with specific characteristics that require this issue to be classified as Category 2. In fact, the York et al. study specifically states on page 66 of Appendix A of the report that Southern California Edison (SCE) meets the thermal requirements of its NPDES permits for environmental limits. Consistent with the NRC's conclusion that the impacts attributable to radioactive releases below regulatory limits are small, the fact that SCE is complying with the thermal limits in its NPDES permits supports the GEIS statement (page 4-8, lines 25-26) that the impacts are SMALL and that thermal discharge on aquatic organisms should be classified as a Category 1 issue.*

[Commenter footnote 1: *Editorial note: the reference in the draft updated GEIS is incorrect. The reference should be: <http://www.energy.ca.gov/2005publications/CEC-700-200-013/>*]

[Commenter footnote 2: *PG&E submitted its license renewal application on November 23, 2009*]

¹⁷ Note: commenter references to the revised GEIS are to the version that was issued along with the proposed rule in July 2009.

for Diablo Canyon Power Plant.]

The commenter also cites a 1999 finding by the California State Water Resources Control Board which concludes that there is no evidence of adverse impacts caused by the thermal component of the discharge from the San Onofre utility. The commenter asserts that:

Hence, the experience at SONGS does not support the NRC's assertion that thermal discharges could result in MODERATE OR LARGE impacts during the license renewal term for plants with once through cooling systems.

The commenter concludes:

In conclusion, the NPDES permitting process established under the Clean Water Act requires that the permitting agency issue a permit that assures the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. Therefore, the issue of thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds) should be classified as Category 1, consistent with the criteria discussed on Page S-5 of the draft updated GEIS:

- *Environmental impacts associated with the thermal issue apply to all plants.*
- *A single significance level (SMALL) can be assigned to the impacts.*
- *Mitigation of adverse impacts associated with the thermal issue, if needed, would be placed in the NPDES Permit and re-evaluated every five years during the permit renewal cycle by the permitting agency.*

NRC RESPONSE:

The NRC agrees with the comment in part and disagrees with the comment in part. In the proposed rule, the NRC consolidated four Category 1 1996 GEIS issues, "Cold shock (for all plants)," "Thermal plume barrier to migrating fish (for all plants)," "Distribution of aquatic organisms (for all plants)," and "Premature emergence of aquatic insects (for all plants)," with a Category 2 1996 issue, "Heat shock (for plants with once-through and cooling pond heat dissipation systems)." The proposed rule named the consolidated issue "Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)" (74 FR 38124). The intent was to streamline the environmental review process, as these issues all concerned thermal effects from plants using once-through cooling systems or cooling ponds. Subsequent to the publication of the proposed rule, the NRC determined that the consolidation of these Category 1 issues with a Category 2 issue would require that each constituent issue be treated as a Category 2 issue. As it was not the intent of the NRC to reclassify or otherwise treat the four Category 1 issues, "Cold shock (for all plants)," "Thermal plume barrier to migrating fish (for all plants)," "Distribution of aquatic organisms (for all plants)," and "Premature emergence of aquatic insects (for all plants)" as Category 2 issues, the NRC determined that the Category 1 issues had to be separated from the Category 2 issue. In this regard, the NRC agrees with the comment.

The final rule separates the constituent issues of the proposed rule's consolidated issue "Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)." Specifically, the four Category 1 1996 GEIS issues, "Cold shock (for all plants)," "Thermal plume barrier to migrating fish (for all plants)," "Distribution of aquatic organisms (for all

plants),” and “Premature emergence of aquatic insects (for all plants),” are removed from the “Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)” issue and consolidated with a fifth Category 1 1996 GEIS issue, “Stimulation of nuisance organisms (e.g., shipworms).” The final rule names this consolidated issue, “Infrequently reported thermal impacts (all plants)” and classifies the issue as Category 1 (it is listed as issue (41) of the final rule). These five Category 1 1996 GEIS issues were consolidated to facilitate the environmental review process because they are all caused by thermal effects resulting from operation of a plant’s cooling system. Previous license renewal reviews conducted by the NRC since the issuance of the 1996 GEIS have shown that these thermal issues (now grouped together as “Infrequently reported thermal impacts (all plants)”), have not caused a significant (moderate or large) impact at operating nuclear power plants and these findings are not expected to change during the license renewal term.

The remaining issue of the proposed rule’s Category 2 “Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)” issue is the Category 2 1996 GEIS issue, “Heat shock (for plants with once-through and cooling pond heat dissipation systems).” The final rule retains the proposed rule’s title for the issue. It remains a Category 2 issue with an impact range of small to large, and as such, the NRC disagrees with the comment in this respect. Environmental conditions are different at each nuclear plant site and thermal impacts associated with once-through cooling systems or cooling ponds cannot be determined generically. According to the 1996 GEIS, the potential for thermal discharge effect is considered to be greatest at plants with once-through cooling systems or plants that use cooling ponds, primarily because of the higher discharge temperatures and larger thermal plume area. As stated in both the revised GEIS and the final rule, the NRC reaffirms this 1996 GEIS finding.

The NRC acknowledges that licensees must comply with the Clean Water Act (CWA) and the CWA’s requirement to obtain a NPDES permit. The NRC regulations, however, clearly state that the “environmental impact of the proposed action will be considered in the analysis with respect to matters covered by environmental quality standards and requirements irrespective of whether a certification or license from the appropriate authority has been obtained.”¹⁸ The NRC regulations also state that compliance with the environmental requirements of the CWA “is not a substitute for, and does not negate the requirement for the NRC to weigh all environmental effects of the proposed action,...and to consider alternatives to the proposed action that are available for reducing adverse effects.”¹⁹ In order to satisfy these regulatory requirements, the NRC has determined that it must make up-to-date evaluations of the thermal effects of cooling water discharges from once-through cooling systems or the use of cooling ponds and that it must review current and historic information to assign the levels of impact to aquatic organisms from license renewal. In this regard, the NRC notes that not all plants undergoing license renewal have had recent reviews of their NPDES permits, and many plant- and site-specific operational, physical, and biological aspects influence the impacts.

The commenter asserts that the July 2009 version of the revised GEIS that was published along with the proposed rule based its Category 2 classification on the thermal effects caused by the SONGS and the Diablo Canyon plants in California as described in the 2005 study by York, et al. The NRC does not agree that it based its Category 2 classification solely on the thermal effects at the SONGS and the Diablo Canyon plants, but rather the NRC used these two plants among others, as examples of the site-specific nature of this issue. The July 2009 version of

¹⁸ 10 CFR 51.71(d).

¹⁹ 10 CFR 51.71(d), n. 3.

the revised GEIS identifies several fish kills, due to or likely attributable to, the thermal effects from once-through cooling systems or the use of cooling ponds, including the fish kills at the Pilgrim plant in Massachusetts in 1975 and 1978, the fish kill at La Salle County Station in Illinois in 2001, the fish kills at Braidwood Nuclear Station in Illinois in 2001 and 2005, and the fish kills at the Summer plant in South Carolina during the 1980s. In addition, the July 2009 version of the revised GEIS discusses sub-lethal effects from thermal discharges that may affect aquatic organisms such as stunning or disorientation of fishes. Such effects can alter predator-prey interactions by increasing the susceptibility of affected individuals to predation. Other potential adverse effects include malnutrition, which organisms may experience when overwintering within thermal plumes. Thermal discharges can also increase the susceptibility of fishes to diseases and parasites as a result of a combination of the increased density of fish within the thermal plume (potentially leading to increased exposure to infectious diseases or other stresses), the fish being more prone to infection in warmer water, and the ability of diseases and parasites to develop faster at higher temperatures. Other potential temperature-related impacts on aquatic resources could include the loss of smolt characteristics in salmon or premature spawning. The commenter did not address any of these additional factors, all of which are examples of the site-specific nature of the thermal effects, which depend on the individual nature of the cooling system, the receiving water body, and the aquatic resources affected. The NRC has updated and edited the 2009 version of this issue in the revised GEIS.

Given these factors, including the potential for cumulative effects noted immediately above, the NRC has determined that the “Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)” issue is properly classified as Category 2.

23. Effects of Cooling Water Discharge on Dissolved Oxygen, Gas Supersaturation, and Eutrophication

IDENTIFIER: Hubbard-2-6

COMMENT:

A commenter objected to the classification of the proposed rule issue, "Effects of cooling water discharge on dissolved oxygen, gas supersaturation, and eutrophication," as Category 1. The commenter requested that the NRC reclassify the issue as Category 2. The comment is excerpted below:

"Environmental conditions are different at each nuclear plant site and impacts cannot be determined generically."

Rates of eutrophication vary significantly due to differences in climate. Climate and local temperature differences also impact dissolved oxygen production, uptake, and saturation levels. While Table B-1 makes the claim that eutrophication has not been a problem at nuclear plants, thermal pollution from cooling water discharge does negatively impact eutrophication and dissolved oxygen. So much so that some plants across the nation have to reduce power or shut down when the ambient temperatures are extremely high. This evaluation makes no mention of that fact.

Furthermore, 36 nuclear plants are located on lakes, 47 on rivers, and 18 on coasts, bays, and estuaries. To claim that the effects of cooling water discharge at sites located from the state of Washington to southern California on the west coast, and from Vermont to southern Florida on the east coast, can be generically treated in a single impacts evaluation brings into question the NRC's willingness or ability to conduct environmental impacts assessments. This issue should be assigned Category 2 status and evaluated on a site-specific basis.

NRC RESPONSE:

The NRC disagrees with this comment. Impacts from cooling water discharge on dissolved oxygen levels, gas supersaturation and eutrophication were identified as Category 1 issues in the revised GEIS on the basis of a review of past studies, operating experience, and the findings of license renewal reviews that have been conducted since the publication of the 1996 GEIS. Any changes in plant operating parameters or other new and significant information pertinent to an evaluation of these impacts would be considered during preparation of plant-specific supplements to the GEIS. Thus, even though this issue is considered to be Category 1, there are mechanisms in place to conduct a full site-specific review if new and significant information warrants such a review.

No changes were made to the revised GEIS or the final rule in response to this comment.

24. Exposure of Aquatic Organism to Radionuclides

IDENTIFIER: NEI2-16(1)-10

COMMENT:

An industry commenter objects to the proposed rule's inclusion of a new Category 1 issue, "Exposure of Aquatic Organisms to Radionuclides." Excerpts of the comment are set forth below:

Regarding the agency's basis for adding this new Category 1 issue, the proposed rule states only that: "This issue has been raised by members of the public as well as Federal and State agencies during the license renewal process for various plants."

...

In terms of the issue's significance, the proposed rule does not indicate why the potential impact of the exposure of aquatic organisms to radionuclides was not evaluated in the 1996 GEIS and what events have prompted NRC to propose inclusion of the issue now. (In this regard, NRC concludes that the impact of radionuclides on aquatic biota from past and current operations would be small for all nuclear power plants and would not be expected to change appreciably during the license renewal term. 74 Fed. Reg. 38,125.) In sum, the only rationale offered for adding the new issue to the GEIS is that an unknown number of members of the public and unspecified Federal and State agencies have raised the issue in some license renewal review(s), but this does not provide adequate support for including it as a new issue in the GEIS. As discussed above, the standard for including a new issue in the GEIS is whether it is within the scope of NEPA, the NRC's jurisdiction, and license renewal, including whether it is significant and reasonably foreseeable. If the standard were to be whether the issue has been raised during previous reviews, then there really would be no standard at all.

For all of these reasons, this issue need not and should not be included as a new issue in the GEIS, absent sufficient justification. NEI requests that NRC either revise the proposed rule to provide its rationale for adding this new issue or omit it from the revised GEIS.

NRC RESPONSE:

The NRC disagrees with this comment. Examination of the potential impacts of radioactive materials in the environment is within the scope of license renewal environmental reviews because all operating commercial nuclear power plants routinely release radioactive gaseous and liquid effluents into the environment under controlled conditions in accordance with the NRC radiation protection standards. As detailed in the GEIS, aquatic organisms, like terrestrial organisms, may be exposed externally to ionizing radiation from radionuclides in water, sediment, and other biota. Additionally, aquatic biota can be exposed internally via ingested food and water and in certain situations, absorption through the skin and respiratory organs. Fish, especially developing eggs and young, appear to be the aquatic organisms that are the most sensitive to the effects of ionizing radiation. The NRC reviewed an extensive body of literature in this regard. Such new research, findings, and other information were considered when the significance of impacts associated with license renewal was being evaluated.

Issues identified by members of the public and other stakeholders, including Federal and State agencies, during site-specific environmental reviews may raise legitimate human health and

environmental matters. The NRC has conducted over 40 license renewal actions since the issuance of the 1996 GEIS, and these 40 plus license renewal actions, as well as studies and other literature reviewed by the staff, lessons learned in conjunction with those site-specific license renewal actions, and comments received from stakeholders during scoping periods or on the draft SEIS, serve as an adequate basis to identify additional issues for consideration in the revised GEIS. The fact that a given issue was not included in the 1996 GEIS is not a bar to include the issue in the revised GEIS. Clearly, it is well within the NRC's discretion to add this issue. Please see the response to NEI comment NEI2-16-2, *et al* for further details.

No changes have been made in the final rule in response to this comment.

25. Effects of Dredging on Aquatic Organisms

IDENTIFIER: NEI2-16(1)-11

COMMENT:

An industry commenter objected to the inclusion of a new Category 1 issue, "Effects of dredging on aquatic organisms," in the GEIS and Table B-1. An excerpt of the comment is set forth below:

In terms of the issue's significance, the proposed rule does not indicate why the potential impact of dredging on aquatic organisms was not evaluated in the 1996 GEIS and what events have prompted NRC to propose inclusion of the issue in the revised GEIS. Additionally, NRC acknowledges that dredging activity is performed under a U.S. Army Corps of Engineers permit and would be the subject of an Army Corps site specific environmental review. For all of these reasons, this issue need not and should not be included as a new issue in the GEIS, absent sufficient justification. NEI requests that NRC either revise the proposed rule to provide its rationale for adding this new issue or omit it from the revised GEIS.

NRC RESPONSE:

The NRC disagrees with this comment. See the NRC's response to comment NEI2-16(1)-8 for further explanation as to NRC's rationale for disagreeing with this comment. In addition to effects on ambient water quality from sediment suspension and resettling on aquatic habitats as documented and described in the GEIS, dredging conducted in the vicinity of nuclear power plant discharge and intake structures is assumed to kill aquatic species living on or in the affected sediments. Recovery of affected areas can occur relatively quickly or take up to several years based on the data reviewed by the NRC. Although the GEIS concludes that the overall impacts of dredging would likely be small, dredging clearly has an environmental impact related to the operation of some nuclear power plants and warrants examination. Therefore, the NRC has determined that such impacts should be evaluated in its SEIS in consideration of any new and significant information that could change the conclusion in the GEIS with regard to this issue.

Issues identified by members of the public and other stakeholders, including federal and state agencies, during site-specific environmental reviews may raise legitimate human health and environmental matters. The NRC has conducted over 40 license renewal actions since the issuance of the 1996 GEIS and these 40 plus license renewal actions, as well as studies and other literature reviewed by the staff, lessons learned in conjunction with those site-specific license renewal actions, and comments received from stakeholders during scoping sessions or upon the draft SEIS, serve as an adequate basis to identify additional issues for consideration in the revised GEIS. The fact that a given issue was not included within the 1996 GEIS is not a bar to include the issue in the revised GEIS. Clearly, it is well within the NRC's discretion to add this issue. Please see the response to NEI comment NEI2-16-2, *et al* for further details.

No changes have been made in the final rule in response to this comment.

26. Impacts of Transmission Line Right-of-Way (ROW) Management on Aquatic Resources

IDENTIFIER: NEI1-7(2)-19
COMMENT: <i>Impacts of Transmission Line ROW Management on Aquatic Resources—Modify Table B-1 to reflect that the draft updated GEIS indicates that the only transmission lines to be considered in license renewal NEPA reviews are those lines that would not remain operable if the NRC did not renew a nuclear plant's operating license, and such transmission lines run from the plant's turbine generator building to a switching station or substation, typically located on the power plant site, from which electricity is transferred into the regional electrical grid. Hence, impacts on aquatic resources are unlikely because the onsite environments through which in-scope ROWs pass would not typically include aquatic resources.</i>
NRC RESPONSE: The NRC agrees with this comment. See the response to comment NEI1-7(2)-16.

IDENTIFIER: NEI2-16(1)-12
COMMENT: An industry commenter objected to the inclusion of a new Category 1 issue, "Impacts of Transmission Line Right-of-Way (ROW) Management on Aquatic Resources," in the GEIS and Table B-1. An excerpt of the comment is set forth below: <i>The proposed rule does not indicate why this potential impact was not evaluated in the 1996 GEIS and what events have prompted NRC to propose inclusion of the issue in the revised GEIS. In addition, the proposed rule discussion merely states that impacts on aquatic resources from transmission line ROW maintenance "could occur," which may indicate that this potential impact is remote and speculative and therefore need not be evaluated under NEPA. Finally, NRC should clarify the extent of its jurisdiction over the issue of transmission line ROW, to provide useful guidance to NRC applicants on environmental review requirements. For all of these reasons, this issue need not and should not be included as a new issue in the GEIS, absent sufficient justification. NEI requests that NRC either revise the proposed rule to provide its rationale for adding this new issue or omit it from the revised GEIS.</i>
NRC RESPONSE: The NRC disagrees with the comment, except to the extent that it agrees to clarify its jurisdiction over transmission line rights-of-way (ROWs). The NRC's review has concluded that the environmental impacts of in-scope transmission line right-of-way maintenance activities upon aquatic resources would likely be small, short term, and localized over the license renewal term, as detailed in the revised GEIS. Thus, the NRC has classified the issue as Category 1. Impacts on aquatic resources from such maintenance activities may occur as a result of the direct disturbance of aquatic habitats, soil erosion, changes in water quality (from sedimentation and thermal effects), or inadvertent releases of

chemical contaminants from herbicide use throughout the license renewal term. After conducting several license renewal environmental reviews since the issuance of the 1996 GEIS, the NRC concluded that some level of impact associated with these activities is likely and therefore, reasonably foreseeable and warrants examination. As a result, the NRC has determined that such impacts should be evaluated in its SEIS in consideration of any new and significant information that could change the conclusion in the GEIS with regard to this issue.

With respect to the commenter's request for clarification on NRC's jurisdiction over transmission line ROWs, see Sections 3.1.1 and 3.1.6.5 of the revised GEIS and Section 2.2 of "Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications," Regulatory Guide 4.2, Supplement 1, Revision 1 (prepared in connection with this final rule; the draft guide, DG-4015, was issued with the proposed rule for comment). These sections define the portion of the transmission lines that are considered in scope for the license renewal environmental review. For consistency with the aforementioned, the final rule revised Table B-1 to add a footnote that echoes this definition.

Issues identified by members of the public and other stakeholders, including Federal and State agencies, during site-specific environmental reviews may raise legitimate human health and environmental matters. The NRC has conducted over 40 license renewal actions since the issuance of the 1996 GEIS, and these 40 plus license renewal actions, as well as studies and other literature reviewed by the staff, lessons learned in conjunction with those site-specific license renewal actions, and comments received from stakeholders during scoping periods or on the draft SEIS, serve as an adequate basis to identify additional issues for consideration in the revised GEIS. The fact that a given issue was not included in the 1996 GEIS is not a bar to include the issue in the revised GEIS. Clearly, it is well within the NRC's discretion to add this issue. Finally, the use of the phrase "could occur" in relation to this issue, does not, of and by itself, denote that the likelihood of an adverse impact on the resource is "remote and speculative." Please see the response to NEI comment NEI2-16-2, *et al* for further details.

27. Historic and Cultural Resources

IDENTIFIER: TVA-32-6

COMMENT:

An industry commenter requested that the issue, “Historic and cultural resources,” be classified as Category 1. The comment is set forth below:

Impact to Historic and Cultural Resources

In the proposed rule and the proposed GEIS revision, NRC classifies this as a Category 2 issue regardless of the incremental impact of the license renewal activities on historic and cultural resources. TVA believes that it is the excavation and installation associated with construction activity that has the potential to impact historic resources. The continued operation of a plant through license renewal is unlikely to impact historic resources. Therefore, TVA recommends that activities associated with license renewal should be considered a Category 2 issue only if the activities would adversely impact a historic property listed on or eligible for listing on the National Register of Historic Places. In the event of such an adverse effect, these activities would be subject to the requirement under Section 106 of the National Historic Preservation Act to mitigate the adverse impact, and to the requirement that a plant-specific analysis be included in the licensee’s environmental report.

NRC RESPONSE:

The NRC disagrees with this comment. As discussed in the revised GEIS, most nuclear plant sites were not investigated for the presence of historic and cultural resources prior to construction; many licensees may not be aware of the occurrence or status of historic and cultural resources on their site. As such, there is some question as to whether historic properties are present upon or near the plant site. In accordance with the National Historic Preservation Act implementing regulations of the Advisory Council on Historic Preservation, 36 CFR Part 800, the Federal agency must determine the “area of potential effects,” as that term is defined at 36 CFR 800.16(d). The area of potential effects may be broader than the actual plant site. Consequently, a site-specific analysis of historic and cultural resources will be required in an applicant’s environmental report. The issue remains classified as Category 2 under the final rule.

No changes have been made in the final rule in response to this comment.

IDENTIFIER: NE11-7(2)-20

COMMENT:

Historic and Cultural Resources—Delete the words “and in the transmission line ROW” from this entry in Table B-1 because the draft updated GEIS indicates that the only transmission lines to be considered in NEPA reviews are those transmission lines that would not remain operable if the NRC did not renew a nuclear plant’s operating license, and such transmission lines run from the plant’s turbine generator building to a switching station or substation, typically located on the power plant site, from which electricity is transferred into the regional electrical grid. Hence, impacts on historical and cultural resources as a result of ROW operations and maintenance

during the extended term of the plant's operation are unlikely because the onsite environments through which in-scope ROWs pass would have typically already been disturbed.

NRC RESPONSE:

The NRC disagrees with this comment. As discussed in the revised GEIS, most nuclear plant sites were not investigated for the presence of historic and cultural resources prior to construction; many licensees may not be aware of the occurrence or status of historic and cultural resources on their site. Activities involving vegetation maintenance in the transmission line ROW have the potential to disturb the ground surface, although the NRC's experience indicates that historic properties can remain intact in transmission line ROWs. If historic properties are present in the in-scope transmission line ROW, any prior disturbance may or may not have affected the eligibility of any such historic properties for listing on the National Register of Historic Places (NRHP).

Under the regulations of the Advisory Council on Historic Preservation, 36 CFR Part 800, which implements section 106 of the National Historic Preservation Act (NHPA) and are applicable to all Federal agencies, license renewal is considered an "undertaking." As such, the NRC is required to identify any historic properties that may be present on the plant site and its associated in-scope transmission lines. If such properties are or may be present, the NRC is required to carry out its interrelated regulatory and consultation requirements under the NHPA.

The final rule amends Table B-1 by appending a footnote to the issue column entry in Table B-1 for the "Historic and cultural resources" issue; the footnote prescribes the extent to which transmission line ROWs are in-scope for the revised GEIS, and any license renewal environmental reviews associated with an applicant's environmental report or a staff prepared SEIS. Footnote number 4 to Table B-1 states "This issue applies only to the in-scope portion of electric power transmission lines which are defined as transmission lines that connect the nuclear power plant to the substation where electricity is fed into the regional power distribution system and transmission lines that supply power to the nuclear plant from the grid."

No changes have been made in the final rule in response to this comment.

28. Transportation

IDENTIFIER: PIIC-8-3

COMMENT:

A commenter requested clarification as to why the NRC, in the proposed rule, reclassified the Category 2 issue "Public services, transportation" as Category 1 (the proposed rule renamed the issue, "Transportation"). The final rule adopts the proposed rule's changes. The comment is set forth below:

Page 38126 of the Federal Register Notice, item (56) Transportation reclassifies the Category 2 issue "Public services, transportation," as a Category 1 issue, concluding that "transportation impacts are no longer anticipated from future license renewals." However, in the draft Supplemental Environmental Impact Statement on the renewal application for the Prairie Island Nuclear Generating Plant, the NRC found that the impacts from transportation during refurbishment could be SMALL to MODERATE (emphasis added). Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 39, Regarding Prairie Island Nuclear Generating plant, Units 1 and 2, Draft Report for Comment, NUREG-1437, Supplement 39, at 3.2.7 (2009). If a recent draft SEIS found that this type of impact could approach MODERATE, what is the criteria and justification for transferring these types of impacts from a Category 2 designation to a Category 1 designation? Please explain.

NRC RESPONSE:

Previous environmental reviews have shown that license renewal would have no impact on local traffic conditions in the vicinity of a nuclear power plant beyond what is currently being experienced. Transportation impacts caused by power plant operations are ongoing and have become well established during the current licensing term for all nuclear power plants. Moreover, it is unlikely that the number of operations workers commuting to the power plant would change during the license renewal term. While it was estimated in the 1996 GEIS that up to 60 additional workers per unit could be required during the license renewal term, subsequent environmental reviews have shown little or no need for additional operations workers.

As explained in the revised GEIS, refurbishment activities at operating plants have also not required the numbers of workers and the months of time conservatively estimated in the 1996 GEIS. Consequently, employment at nuclear power plants during the license renewal term is expected to remain unchanged. In addition, transportation impacts from refurbishment have been found to be similar to those experienced during routine plant refueling and maintenance outages.

Increases in the number of workers at nuclear power plants during regularly scheduled plant refueling and maintenance outages have caused brief, short-term increases in traffic volumes on roads in the vicinity of each plant during shift changes. However, because of the relative short duration of these outages, increased traffic volumes have had little or no lasting impact. Consequently, continued power plant operations and refurbishment associated with license renewal are not likely to affect local transportation conditions in the vicinity of a nuclear power plant beyond what is currently being experienced. This characterization is accurate for the Prairie Island Nuclear Generating Plant (PINGP) as well. It is for these reasons the "Public services, transportation" issue was changed to a Category 1.

In the May 2011 final SEIS for PINGP (Supplement 39 to NUREG–1437), the NRC determined an impact range of “small to moderate” was appropriate for describing the significance of transportation impacts during shift changes in support of Unit 2 steam generator replacement (refurbishment) activities. This is reflective of the unique land use, transportation constraints, and of the cultural and commercial interests of the Prairie Island Indian Community in close proximity to the power plant. The NRC sought to conservatively bound the range of potential impacts using this range. As described in Section 3.2.7 of the SEIS for PINGP, a number of mitigation measures could be implemented to reduce transportation impacts. Mitigation measures include using Northern States Power’s private access road, staggered work schedules and the use of plant personnel and/or local police to direct traffic entering and leaving the plant. The conservative bounding of the impact range is a result of the uncertainty surrounding the degree to which the mitigation measures may be implemented.

Also, an assessment of new and significant information during a plant-specific environmental review for a Category 1 issue could result in an impact finding greater than “small,” and a Category 1 issue designation does not limit the determination of potential impacts to only “small.”

29. Physical Occupational Hazards

IDENTIFIER: NEI1-7(1)-6; NEI-16(1)-1; NEI2-16(1)-13; NEI1-7(4)-4

COMMENT:

An industry commenter objected to the addition of a new Category 1 issue, "Physical occupational hazards," and requested its removal. The comment is set forth below:

The issue of "Physical occupational hazards" was not addressed in the 1996 GEIS and was not raised in any scoping comment received by the NRC during the public scoping process for the updated GEIS (see draft updated GEIS, Volume 2, Appendix A). Industry recognizes that NEPA imposes several obligations on federal agencies regarding the scope of an environmental impact statement. However, the NRC and Council on Environmental Quality (CEQ) NEPA regulations and guidance contain no indication that an NRC EIS must address human health hazards, such as physical occupational hazards, that are controlled by the Occupational Safety and Health Act (29 U.S.C. 651 et seq.) as implemented by the Occupational Safety and Health Administration (OSHA) pursuant to the 1988 Memorandum of Understanding between NRC and OSHA regarding worker protection at facilities licensed by the NRC. Hazards of this type are not unique to nuclear power plants. Rather, they occur in all types of industrial and commercial business facilities where they are similarly controlled by the OSHA. Accordingly, evaluating these hazards in the updated GEIS is unnecessary and requiring nuclear power plant license renewal applicants to conduct reviews of whether new and significant information concerning these hazards exists at their plants would waste resources. For this reason, the issue of "Physical occupational hazards" should be deleted from the issues listed in Table B-1 of Appendix-B in the updated GEIS (Volume 2) and Table B-1 in 10 CFR 51, Appendix B.

NRC RESPONSE:

The NRC disagrees with this comment. The NRC has determined that consideration of occupational health impacts is fully within the scope of NEPA and CEQ regulations for implementing NEPA with regard to the requirement to evaluate effects on the human environment, which encompasses those to human health. Further, the issue of physical occupational hazards is typically evaluated in most environmental impact statements (EISs), and is now evaluated in the GEIS for completeness (i.e., as a related human health issue). License renewal environmental reviews must address the full spectrum of environmental impacts associated with operations over the license renewal term. This is essential to enable the NRC to meet its statutory obligations under Section 102(2) of NEPA and to specifically fulfill its responsibilities under 10 CFR 51.70(b) to independently evaluate and be responsible for the reliability of all information used in a SEIS and to provide evidence that the necessary environmental analyses have been conducted.

The NRC does agree that industrial hazards are not unique to nuclear power plants. The NRC has also concluded that physical occupational hazards at nuclear power plants can be addressed generically and impacts on worker health are small, as discussed in the revised GEIS. As such, the impacts of physical occupational hazards were made Category 1.

No changes have been made in the final rule in response to this comment.

30. Electric Shock Hazards

IDENTIFIER: NEI1-7(2)-21

COMMENT:

An industry commenter requested that the Table B-1 finding statement column entry for the Category 2 issue “Electric shock hazards,” be clarified to apply only to those transmission lines that are considered “in-scope.” The comment is excerpted below (deletions in strikeout and additions are underlined):

The NRC should modify the text in Table B-1 of 10 CFR 51, Appendix B in for the issue labeled “Electric shock hazards” to read as follows:

SMALL, MODERATE, or LARGE impact. Electrical shock potential is of small significance for transmission lines that are operated in adherence with the National Electrical Safety Code (NESC). Without a review of ~~each nuclear plant transmission line~~ conformance with NESC criteria for each transmission line that connects a particular nuclear power plant to the switching station required to transfer power from the plant to the offsite network of power lines, it is not possible to determine the significance of the electrical shock potential for those transmission lines.

NRC RESPONSE:

The NRC agrees that the Table B-1 finding column entry for the issue “Electric shock hazards,” should be clarified to apply to only those transmission lines that are “in-scope.” Essentially, in-scope transmission lines (i.e., those that need to be addressed by the license renewal applicant in its environmental report) are those lines that would be decommissioned in the event that the plant’s operating license was not renewed. Sections 3.1.1 and 3.1.6.5 of the revised GEIS define the extent of in-scope transmission lines subject to license renewal environmental reviews. The final rule amends Table B-1 by revising the finding column entry for the “Electric shock hazards” issue as follows:

Electrical shock potential is of small significance for transmission lines that are operated in adherence with the National Electrical Safety Code (NESC). Without a review of conformance with NESC criteria of each nuclear power plant’s in-scope transmission lines, it is not possible to generically determine the significance of the electrical shock potential.

In addition, the final rule amends Table B-1 by appending a footnote to the issue column entry in Table B-1 for the “Electric shock hazards” issue; the footnote prescribes the extent to which transmission line ROWs are in-scope for the revised GEIS, and any license renewal environmental reviews associated with an applicant’s environmental report or a staff prepared SEIS. Footnote number 4 to Table B-1 states “This issue applies only to the in-scope portion of electric power transmission lines which are defined as transmission lines that connect the nuclear power plant to the substation where electricity is fed into the regional power distribution system and transmission lines that supply power to the nuclear plant from the grid.”

31. Severe Accidents

IDENTIFIER: Hubbard–2–7

COMMENT:

A commenter objected to the impact finding of small for the Category 2 issue, “Severe accidents.” The comment is set forth below:

NRC stating that a severe accident's impact is SMALL just because the NRC has judged the probability of a severe accident to be small defies logic and does not meet the intent of the NEPA requirements.

For example, Dr. Ed Lyman of the Union of Concerned Scientists, using the NRC's own analysis method, determined that a worst-case accident or attack at the Indian Point nuclear power facility 35 miles north of New York City could cause up to 43,700 immediate deaths and up to 518,000 cancer deaths over time. The costs could reach \$2.1 trillion and would result in the permanent relocation of 11.1 million people. And the NRC deems this a SMALL impact because it probably won't happen?

As a member of the public dependent on the NRC to protect human and environmental health, I am uncomfortable with this blithe proclamation that impacts from a severe accident are SMALL. Such a claim erodes public faith in the NRC's ability or willingness to protect human and environmental health.

NRC RESPONSE:

The NRC disagrees with this comment. NEPA does not require federal agencies to prepare a “worst-case” analysis of the environmental impacts of licensing actions. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 354–56 (1989). Rather, under NEPA agencies must discuss foreseeable impacts and in so doing may evaluate the probabilities of those impacts occurring. *Id.* Therefore, in discussing the consequences of severe accidents, the NRC also reasonably considered the probability of such events.

Severe accidents (i.e., beyond design-basis accidents) are those that could result in substantial damage to the reactor core, whether or not there are serious off-site consequences. The 1996 GEIS estimated and considered the potential impacts on human health and economic factors from full-power severe reactor accidents initiated by internal events at different types of nuclear facilities located in different types of settings. That evaluation included modeling the release of radioactive materials into the environment and modeling the pathways (i.e., exposure to the radioactive plume, inhalation of radioactivity, consumption of contaminated food) through which members of the public could potentially be exposed to doses of radiation. Based on the calculated doses, the 1996 GEIS reported the consequences (i.e., potential early and latent fatalities) from such accidents. In developing a potential impact level, however, the NRC took into account the very low probability of such events, as well as their potential consequences, and concluded that the likely impact from individual nuclear power plants is small.

In the draft July 2009 version of the revised GEIS that accompanied the proposed rule, the NRC staff expanded the scope of the severe accident evaluations and used more recent technical information that included both internal and external event core-damage frequency, as well as improved severe accident source terms, spent fuel pool accidents, low power and reactor

shutdown events, new radiation risk-coefficients from the National Academy of Sciences, “Health Risks from Exposure to Low Levels of Ionizing Radiation: Biological Effects of Ionizing Radiation (BEIR) VII report,” and risk impacts of reactor power uprates and higher fuel burn-up levels. As a result, the draft July 2009 version of the revised GEIS considered new and updated information in determining the potential consequences of a reactor accident. After reviewing this more recent information, the staff concluded in the revised GEIS that the finding in the 1996 GEIS with respect to severe accidents remains valid; that is, given that the probability of a severe reactor accident remains very low, the environmental impacts of a severe accident are small at all plant sites.

The NRC staff notes, however, that the GEIS is not the primary vehicle the NRC staff uses to address and regulate risks from severe accidents. The NRC’s regulations and regulatory practices employ safety standards in the design, construction, and operation of a nuclear power plant as well as risk models to ensure the public is adequately protected on an ongoing basis, not just when the licensee seeks renewal of its operating license. The NRC’s ongoing oversight addresses the public’s risk from nuclear power plant accidents, accounts for the effects of proposed changes that may be made as part of power plant operations, and considers new information about the facility or its environment when necessary.

Although the NRC staff has determined that impacts from severe accidents are small for all facilities, the NRC continues to maintain that the “Severe accidents” issue cannot be classified as Category 1 because potential mitigation measures vary greatly based on plant designs, safety systems, fuel type, operating procedures, local environment, population, and siting characteristics. Thus, under the final rule, the “Severe accidents” issue remains classified as a Category 2 issue. Accordingly, the final rule does not change the requirements in 10 CFR 51.53(c)(3)(ii)(L) that an applicant’s environmental report must contain a discussion that considers alternatives to mitigate severe accidents if the NRC has not previously considered this issue in an environmental impact statement or environmental assessment for that facility.

No changes have been made in the final rule in response to this comment.

32. Environmental Justice

IDENTIFIER: NEI2-16(1)-19

COMMENT:

The proposed rule would add to the GEIS a new Category 2 issue, "Minority and low-income populations," to evaluate the impacts of nuclear plant operations and refurbishment during the license renewal term on minority and low-income populations living in the vicinity of the plant. 74 Fed. Reg. 38,127. Notably, the "environmental justice" issue is currently listed in Table B-1 but was not evaluated in the 1996 GEIS. The discussion of this issue in the proposed rule recites the goals of Executive Order 12898 and the NRC 2004 Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions (69 Fed. Reg, 52,040), and then states:

To accomplish these goals, NRC requires the assistance of applicants in identifying minority and low-income populations and communities residing in the vicinity of the nuclear power plant and determining whether there would be any disproportionately high and adverse human health and environmental impacts on these populations from continued power plant operations and refurbishment activities during the license renewal term.

*74 Fed. Reg. 38,127. NEI concurs that the existing Executive Order and the Commission's interpretation of that Executive Order in its Policy Statement require an impacts analysis in this area. In NEI's view, however, the discussion of environmental justice in the proposed rule should be expanded and clarified to better define the scope of the necessary analysis and indicate whether demographic data alone are sufficient. For example, will this proposed change expand or otherwise modify the scope of the analysis required? If so, how will it change applicants' obligations, and what is the legal and regulatory basis for doing so? In particular, the language in the proposed rule suggests that the NRC proposes to impose more burdensome requirements on license renewal applicants in this area, by requiring them to not only "identify" minority and low-income populations and communities in the vicinity of the plant, but also to "determine" the presence of "disproportionately high and adverse human health and environmental impacts on these populations from continued power plant operations and refurbishment activities during the license renewal term." *Id* at 38,127. (If the applicant determines that overall impacts of LR are not significant, then how can there be a disproportionate impact on low income or minority populations?) For all of these reasons, clarification is needed regarding this issue.*

NRC RESPONSE:

The final rule adds a new paragraph to 10 CFR 51.53, 10 CFR 51.53(c)(3)(ii)(N), which requires that license renewal applicants "provide information on the general demographic composition of minority and low-income populations and communities (by race and ethnicity) residing in the immediate vicinity of the plant that could be affected by the renewal of the plant's operating license, including any planned refurbishment activities, and ongoing and future plant operations." Given this language, license renewal applicants are not required to determine the presence of disproportionately high and adverse human health and environmental impacts on minority and low income populations from continued power plant operations and refurbishment activities during the license renewal term. The NRC, however, interprets 10 CFR 51.53(c)(3)(ii)(N) to require some assessment on the part of applicants regarding the concerns

of minority and low-income populations and communities residing in the immediate vicinity of the plant if those concerns arise from or are related to the proposed license renewal action. Applicants may be knowledgeable of such concerns (for example, concerns communicated through the plant's public affairs and/or environmental management departments or through local citizen advisory groups) and if so, such concerns should be described in the applicant's environmental report. See Sections 3.10 and 4.10 ("Environmental Justice") in "Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications," Regulatory Guide (RG) 4.2, Supplement 1, Revision 1, for more guidance.

IDENTIFIER: PIIC-8-2

COMMENT:

Page 38127 of the Federal Register Notice states that the NRC requires the assistance of applicants in determining whether there would be any disproportionately high and adverse human health and environmental impacts on minority and low income populations from continued power plant operations and refurbishment. This obligation of a license renewal applicant to evaluate environmental justice impacts is consistent with recent NRC adjudicatory decisions. See Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), LBP-0s8-26, 68 NRC 905 (2008) and Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), LBP-08-26 (2009).²⁰ The Supplementary Information for the final rule should emphasize this obligation by stating where the obligation is codified in the regulatory text of 10 CFR Part 51, i.e., in Appendix B, Table B-1. Our concern is magnified by the fact that the license applicant for renewal for the Prairie Island Nuclear Plant repeatedly challenged this basic obligation.

NRC RESPONSE:

The final rule clearly identifies the requirements the license renewal applicant must meet in preparing its environmental report. The final rule classifies the issue, "Minority and low-income populations" as a Category 2 issue in Table B-1, thus requiring the license renewal applicant to address the issue in its environmental report. The final rule also adds a new paragraph to the regulations in 10 CFR Part 51, 10 CFR 51.53(c)(3)(ii)(N), which states that,

Applicants shall provide information on the general demographic composition of minority and low-income populations and communities (by race and ethnicity) residing in the immediate vicinity of the plant that could be affected by the renewal of the plant's operating license, including any planned refurbishment activities, and ongoing and future plant operations.

This information is needed to assist the NRC in achieving the goals of Executive Order (E.O.) 12898. Under E.O. 12898 (59 FR 7629), Federal agencies are directed to identify and address, as appropriate, disproportionately high and adverse human health and environmental impacts on minority and low-income populations. Although as an independent regulatory agency, the

²⁰ The commenter's citation to a follow-on Atomic Safety and Licensing Board (ASLB) decision in 2009 is incorrect. The ASLB did not issue any decision on either of the reactor units at the Prairie Island Nuclear Generating Plant ruled in 2009.

Commission was not required to comply with E.O. 18299, the Commission in 2004 issued a *Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions* (69 FR 52040), which states, “The Commission is committed to the general goals set forth in E.O. 12898, and strives to meet those goals as part of its NEPA review process.”

As described in the December 5, 2008, Atomic Safety and Licensing Board (ASLB) decision cited by the commenter, Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), the license renewal applicant’s environmental report, in accordance with 10 CFR 51.45(c), “should contain sufficient data to aid the Commission in its development of an independent analysis.”²¹ The ASLB decision also stated, in reference to 10 CFR 51.45(c), that “[u]ndoubtedly, this ‘data’ includes information that might aid the Commission in its analysis of environmental justice.”²² Thus, 10 CFR 51.45(c) also provides a regulatory basis for applicant’s to address this issue, in addition to the new 10 CFR 51.53(c)(3)(ii)(N) and Table B–1.

No changes have been made in the final rule in response to this comment.

²¹ Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), LBP–08–26, 68 NRC 905, 931, n. 179 (2008).

²² Id.

33. Onsite Storage of Spent Nuclear Fuel

IDENTIFIER: Hubbard-2-8

COMMENT:

A commenter objected to the classification of the proposed rule issue, "Onsite storage of spent nuclear fuel," as Category 1. The commenter requested that the NRC reclassify the issue as Category 2. The comment is set forth below:

The proposed revisions list this issue as Category 1. However, a generic, fixed-in-time impact analysis cannot possibly cover the changing events occurring now and expected to occur in the future due to the difficulty of finding a suitable long-term repository for spent fuels. Additionally, spent fuels were initially only planned to be stored onsite for several decades. The International Atomic Energy Agency, in its Nuclear Safety Review for the Year 2007, states that:

"Spent fuel storage is becoming more and more important as the construction of geological disposal facilities is being delayed. In consequence, storage periods are extended and storage times of 100 years or longer are being taken into consideration."

Generic impacts evaluation assumes that, in regard to onsite spent fuel storage, all plants: are managed equally; maintenance programs are effective and adequately comprehensive; all facilities have the capacity and are willing to shift spent fuels from pools to dry casks; spill and leak histories at each plant are compatible; original designs for temporary storage are all equally sound for decades-long storage in a safe manner; and that volumes and radioactivity of the spent fuels are the same at each plant.

Due to the varying conditions among nuclear facilities, and especially because the longer-term storage of spent nuclear fuel was not part of any nuclear plant's original design, this issue should be assigned Category 2 status. To assume a generic impacts analysis can accurately represent the conditions at every plant is implausible.

NRC RESPONSE:

The NRC disagrees with this comment. The NRC is aware that a repository for spent nuclear fuel may not be available in the time frame that it was originally envisioned. As an alternative, the Commission has considered the storage of spent nuclear fuel (SNF) on reactor sites where it is generated. The impacts associated with on-site storage of SNF are discussed in Section 4.11.1 of the revised GEIS.

The NRC is committed to ensuring that both spent nuclear fuel and low-level radioactive wastes are managed to prevent health impacts to the public. Spent nuclear fuel is currently stored at reactor sites in the spent fuel pools and/or in independent spent fuel storage installations (ISFSIs). This practice is expected to continue until DOE is ready to take possession of the spent nuclear fuel. At this time, it is uncertain when this will happen.

Interim storage needs vary among plants, with older units having less available pool storage capacity than newer ones. However, given the uncertainty as to when a geologic repository will open and the lack of other options, it is likely that some sort of expanded spent fuel storage capacity beyond the original design capacity will be needed at all nuclear power plants.

On March 3, 2010, DOE submitted a motion to the Atomic Safety and Licensing Board to withdraw its application for a permanent geologic repository at Yucca Mountain, Nevada. In light of the uncertainty surrounding the use of Yucca Mountain, if another repository for spent nuclear fuel is proposed, an environmental impact statement would be prepared.

For spent nuclear fuel, the Waste Confidence Decision and Rule represented the Commission's generic determination that spent nuclear fuel can continue to be stored safely and without significant environmental impacts for a period of time after the end of the licensed life for operation of a nuclear power plant (after the permanent shutdown of the power reactor and expiration of the plant's operating license). This generic determination, codified in 10 CFR 51.23(a), meant that the NRC did not need to consider the storage of spent nuclear fuel after the end of a reactor's licensed life for operation in the National Environmental Policy Act (NEPA) documents that support its reactor and spent-fuel storage license application reviews.

On December 23, 2010, the Commission published a revision of the Waste Confidence Decision and Rule to reflect information gained based on experience in the storage of spent nuclear fuel and the increased uncertainty in the siting and construction of a permanent geologic repository for the disposal of spent nuclear fuel and high-level waste. In response to the 2010 Waste Confidence Decision and Rule, the states of New York, New Jersey, Connecticut, and Vermont, and several other parties challenged the Commission's NEPA analysis in the decision, which provided the regulatory basis for the rule. On June 8, 2012, the United States Court of Appeals, in *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012), vacated the NRC's Waste Confidence Decision and Rule, after finding that it did not comply with NEPA.

In response to the court's ruling, the Commission issued CLI-12-16 on August 7, 2012, in which the Commission determined that it would not issue licenses that rely upon the Waste Confidence Decision and Rule until the issues identified in the court's decision are appropriately addressed by the Commission. CLI-12-16 provided, however, that the decision not to issue licenses only applied to final license issuance; all licensing reviews and proceedings should continue to move forward. In SRM-COMSECY-12-0016, dated September 6, 2012, the Commission directed the NRC staff to proceed with a rulemaking that includes the development of a generic EIS to support a revised Waste Confidence Decision and Rule and to publish both the EIS and the revised Waste Confidence Decision and Rule in the Federal Register within 24 months (by September 6, 2014). The Commission indicated that both the EIS and the revised Waste Confidence Decision and Rule should build on the information already documented in various NRC studies and reports, including the existing environmental assessment that the NRC developed as part of the 2010 Waste Confidence Decision and Rule. The Commission directed that any additional analyses should focus on the issues identified in the D.C. Circuit's decision. The Commission also directed that the NRC staff provide ample opportunity for public comment on both the draft EIS and the proposed Waste Confidence Decision and Rule.

In accordance with CLI-12-16, the NRC will not approve any site-specific license renewal applications until the deficiencies identified in the D.C. Circuit's decision have been resolved. Two license renewal issues that rely, wholly or in part, upon the Waste Confidence Decision and Rule are the "onsite storage of spent nuclear fuel" and "offsite radiological impacts of spent nuclear fuel and high-level waste disposal." Both of these issues were classified as Category 1 in the 1996 GEIS and the 10 CFR Part 51 final rule that was promulgated in 1996 (61 FR 28467, June 5, 1996), which codified the findings of the 1996 GEIS into 10 CFR Part 51, Subpart A, Appendix B, Table B-1. The draft revised GEIS that was published for public comment in 2009 (74 FR 38239, July 31, 2009) and the concomitant proposed rule (74 FR

38117, July 31, 2009) continued the Category 1 classification for both of these issues. As part of the NRC's response to the New York v. NRC decision, the NRC has revised these two issues accordingly.

Specifically, the NRC has revised the Category 1 issue, "Onsite storage of spent nuclear fuel," to narrow the period of onsite storage to the license renewal term. In both the 1996 GEIS and rule and the 2009 draft revised GEIS and proposed rule, the NRC relied upon the Waste Confidence Decision and Rule to make a generic finding that spent nuclear fuel could be stored safely onsite with no more than a small environmental impact for the term of the extended license (from approval of the license renewal application to the expiration of the operating license) plus a 30 year period following the permanent shutdown of the power reactor and expiration of the operating license.

The Waste Confidence Decision and Rule provided the basis for the 30 year period following the permanent shutdown of the reactor and expiration of the operating license. The 2010 Waste Confidence Decision and Rule extended this post-reactor shutdown onsite storage period from 30 years to 60 years. Given the New York v. NRC decision, and pending the issuance of a generic EIS and revised Waste Confidence Decision and Rule (as directed by SRM-COMSECY-12-0016), the period of onsite storage of spent nuclear fuel following the permanent shutdown of the power reactor and expiration of the operating license is now excluded from this GEIS issue. This issue now only covers the onsite storage of spent fuel during the license renewal term.

Similarly, the NRC has revised the Category 1 issue, "Offsite radiological impacts of spent nuclear fuel and high-level waste disposal." This issue pertains to the long-term disposal of spent nuclear fuel and high-level waste, including possible disposal in a deep geologic repository. Although the Waste Confidence Decision and Rule did not assess the impacts associated with disposal of spent nuclear fuel and high-level waste in a repository, it did reflect the Commission's confidence, at the time, in the technical feasibility of a repository and when that repository could have been expected to become available. Without the analysis in the Waste Confidence Decision, the NRC cannot assess how long the spent fuel will need to be stored onsite. Therefore, the NRC has reclassified this issue from a Category 1 issue with no assigned impact level to an uncategorized issue with an impact level of uncertain.

Upon issuance of the revised Waste Confidence Decision and Rule and its supporting generic EIS, the NRC will make any necessary conforming amendments to its regulations in 10 CFR Part 51 and supplement the GEIS as necessary. As referenced previously, the Commission will not approve any license renewal application for an operating nuclear power plant until the issues identified in the New York v. NRC court's decision are appropriately addressed by the Commission.

No changes have been made in the final rule in response to this comment.

34. Offsite Radiological Impacts of Spent Nuclear Fuel and High-Level Waste Disposal

IDENTIFIER: Hubbard-2-9

COMMENT:

A commenter objected to the classification of the proposed rule issue, "Offsite radiological impacts of spent nuclear fuel and high-level waste disposal," as Category 1. The commenter requested that the NRC reclassify the issue as Category 2. The comment is set forth below:

Due to the fact that no country has resolved the issue of safely storing radioactive wastes on a long-term basis, changes in the process and methodology are expected. Since there is no long term repository, no generic impact can be determined because conditions of offsite storage are at this time unknown. This issue should clearly be a Category 2 issue until such time as an offsite repository is found and a generic impacts analysis can be supported with real data.

Discussion of this issue in Table B-1 indicates that the generic impacts evaluation was clearly based on EPA radiation dose limits specific to the proposed repository at Yucca Mountain. The Yucca Mountain site is not ever going to be a radioactive waste repository for reasons too broad and numerous to list here. Obviously, this proposed generic impacts analysis is already dated and not applicable. This issue must be given Category 2 status at least until a long-term repository is designated.

NRC RESPONSE:

The NRC disagrees with the comment. See the NRC's response to comment Hubbard-2-8.

No changes have been made in the final rule in response to this comment.

35. Cumulative Impacts

IDENTIFIER: NEI2-16(1)-20

COMMENT:

The proposed rule would add to the GEIS a new Category 2 issue, "Cumulative impacts," to evaluate "the potential cumulative impacts of license renewal." 74 Fed. Reg. 38,127. The discussion recites the NEPA requirement and the Council on Environmental Quality (CEQ) and NRC regulations relating to cumulative impacts analyses, which are not new. Notably, we understand that the NRC has not previously used these requirements as a basis for requiring that license renewal environmental reports include assessments of the cumulative impacts of license renewal with other reasonably foreseeable projects in the vicinity of the nuclear power plant. Rather, the NRC has required only that the applicant's ER identify past, present, and reasonably foreseeable future projects so that the NRC itself could evaluate the cumulative impacts in the GEIS Supplement, as it is required to do by 40 CFR 1508.7.

The discussion in the proposed rule provides no information as to why the NRC has now decided to require license renewal applicants to assess cumulative impacts. We note that an applicant for license renewal of a nuclear power plant would not have access to all information necessary about other projects (over which the applicant has no control) in the vicinity of its nuclear plant to support an assessment of cumulative impacts of license renewal.

At a minimum, NRC should explain the purpose of adding cumulative impacts as a new Category 2 issue to the GEIS and proposed rule. This explanation should discuss how this proposed change expands or otherwise modifies the scope of the cumulative impacts analysis required for license renewal and the legal and regulatory basis for adding this new Category 2 issue. The proposed rule states only that: "The NRC requires the assistance of applicants in identifying other past, present, and reasonably foreseeable future actions, such as the construction and operation of other power plants and other industrial and commercial facilities in the vicinity of the nuclear power plant." 74 Fed. Reg. 38,127. This does not explain how this new obligation compares with pre-existing analyses of cumulative impacts prepared by both NRC Staff and prior license renewal applicants. For all of these reasons, clarification is needed for this issue.

We note that applicants for license renewal have always provided this type of information in environmental reports, but have not typically extended the environmental reports to include analyses of cumulative impacts because, unless a nearby project is controlled by the applicant (e.g., new nuclear generating units to be owned by the same applicant and placed on or near the site of the unit[s] for which license renewal is being sought), the applicant is unlikely to have access to enough information about the project to assess cumulative impacts. As a federal agency, the NRC is better positioned to obtain the information necessary for such assessments. For all of these reasons, clarification is needed as to the basis for the apparent change in the Commission's position on this issue.

NRC RESPONSE:

In a number of previous and recent license renewal reviews, the NRC has found that the cumulative impacts of extended operation during the renewal term to be greater than small across one or more resource areas (e.g., Susquehanna, Indian Point, Prairie Island, Hope Creek and Salem, etc.). While most cumulative impacts findings with a significance level of

greater than small have been to aquatic and related resources, significant findings have not been confined to ecological resources. Regardless, the findings are in part reflective of the unique operating conditions of the plants and associated plant interactions with the environment. Thus, the NRC has added 10 CFR 51.53(c)(3)(ii)(O) to require applicants to include a cumulative impacts analysis in their environmental reports, as well as a corresponding Category 2 issue to Table B-1 under this final rule.

The NRC does not seek to impose an unwarranted burden on applicants and does not intend that applicants' cumulative impacts analyses be exhaustive and/or that they cover speculative actions of which the applicant could not be expected to have knowledge. In addition, the NRC does not expect that applicants include projects in the early planning stages or projects that are not in the public domain. The NRC continues to be responsible for evaluating cumulative impacts in its plant-specific supplements to the GEIS for license renewal. Given applicants' familiarity with the local conditions surrounding their plants, the NRC believes that applicants are best able to identify other past, present, and reasonably foreseeable future actions that may have a cumulative impact on a given resource. See Section 4.12 ("Cumulative Impacts") in "Preparation of Environmental Reports For Nuclear Power Plant License Renewal Applications," Regulatory Guide 4.2, Supplement 1, Revision 1, for further guidance.

No changes have been made in the final rule in response to this comment.

36. Transportation

IDENTIFIER: Hubbard–2–10

COMMENT:

A commenter objected to the classification of the proposed rule issue, "Transportation," under the Uranium Fuel Cycle issues group, as Category 1. The commenter requested that the NRC reclassify the issue as Category 2. The comment is set forth below:

The continued production of radioactive waste will also require its regular transportation through communities across the U.S. Since the Yucca Mountain repository is unlikely to accept radioactive waste anytime soon, if ever, the shipment of spent fuels cannot be adequately modeled as to the human environmental health risks. Since each facility will be shipping over different routes and different distances, this risk should be evaluated on a site-by-site basis. The generic evaluation in the proposed revisions is already based on faulty assumptions (i.e., that Yucca Mountain will receive wastes). The transportation of new and spent fuels needs to be a Category 2 issue included in each plant's SEIS.

Additionally, the NRC is proposing revisions to 10 CFR Part 110 that will, according to NRC discussion in the Federal Register, "facilitate the licensing process for exports and imports of radioactive wastes..." Approval of these revisions is expected to increase shipping of imported wastes and is not covered in the revised GEIS; increased shipping of fuel and spent fuel will increase if new nuclear plants are constructed, and shipment of spent fuels will increase once long-term repository is opened.

The dynamic nature of the transportation issue makes it inappropriate for generic impact analysis and should be addressed as a Category 2 issue for evaluation on a site-by-site basis, not so much for differing environmental conditions among nuclear plants, but due to the changing amounts of transportation that are expected over time.

NRC RESPONSE:

The NRC disagrees with this comment. The impacts associated with transporting fresh fuel and spent fuel and radioactive waste from a light water reactor are contained in Table S–4 in 10 CFR 51.52. A discussion of the values in Table S–4 and how they may change during the license renewal term was included in Section 6.3 of the 1996 GEIS.

In 1999, the NRC issued an addendum to the 1996 GEIS in which the agency evaluated the applicability of Table S 4 to future license renewal proceedings. In the addendum, the NRC evaluated the impacts of shipping more highly enriched fresh fuel and higher-burnup spent fuel. The NRC concluded that the values in Table S–4 would be bounding. At this time, the conditions evaluated in the addendum have not changed, and no new conditions have been introduced that would alter the conclusions in the addendum. Accordingly, the NRC has determined that the transportation of nuclear fuel is generic to all nuclear power plants and is appropriately classified as Category 1.

The commenter's statements concerning proposed revisions to 10 CFR Part 110 is not related to the revised GEIS and is therefore beyond the regulatory scope of license renewal environmental reviews and this final rule.

No changes have been made in the final rule in response to this comment.

37. Additional Category 2 Issues to be Included

IDENTIFIER: Shaw-15-2
COMMENT: <i>There should be far more Category 2 items available to the public for comment, as there are unique aging, environmental, siting, meteorological, and aquatic issues at each site, depending on the integrity of the structures designed to contain radioactive effluents, and the specific damage already done to natural systems by the thermal (and other) effluents at each [nuclear power plant].</i>
NRC RESPONSE: The NRC disagrees with this comment. The NRC interprets this comment as general opposition to the proposed rule being adopted as a final rule. The commenter does not present any further information or argument to support the commenter's opposition to the rule, nor does the commenter provide any specific item to which the NRC can respond. The NRC has conducted a careful review and update of the technical basis, as contained in the revised GEIS, for the findings presented in Table B-1. The revised GEIS and the changes made by this final rule reflect lessons learned and knowledge gained during previous license renewal reviews conducted since the issuance of the 1996 GEIS and consideration of public comments on issues relevant to license renewal. No changes have been made in the final rule in response to this comment.

38. Clarity and Consistency

IDENTIFIER: NYS AG-14-3
COMMENT: <i>If NRC determines to retain the current criterion to distinguish generic and site-specific environmental impacts, it should instruct Staff to ensure that its analysis focuses on whether the environmental impacts themselves differ from facility site to facility site and not on whether the mechanism by which such environmental impacts may come about may have a common descriptive term, such as once-through cooling or impingement.</i>
NRC RESPONSE: The NRC agrees with the comment. In preparing the revised GEIS, the SRP (NUREG-1555, S1, Rev.1), and RG 4.2 S1, Rev. 1 (DG-4015), the NRC has emphasized a resource-based approach to license renewal environmental reviews. These changes are intended to focus the NRC's analysis on relevant aspects of a particular nuclear power plant's activities including continued operations during the license renewal term and refurbishment associated with license renewal. Differences and similarities in plant characteristics and potential common environmental impacts, by virtue of common mechanical systems, must certainly be considered by the NRC, but the NRC's focus remains on the impacts themselves and the effect on the environment.

IDENTIFIER: NYS AG-14-4	
COMMENT: A commenter requests clarification with respect to an apparent discrepancy between language in the current regulation and in the July 2009 version of the revised GEIS that was published along with the proposed rule concerning one of the criterion used in determining whether a given issue was generic (Category 1) or site-specific (Category 2). An excerpt of the comment is set forth below:	
<i>10 C.F.R. PART 51, TABLE B-1, N.2, 61 FED. REG. 28467, 28496 (JUNE 5, 1996)</i>	<i>PROPOSED GEIS, S-5</i>
<i>(3) Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are likely not to be sufficiently beneficial to warrant implementation.</i>	<i>(3) Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures would probably not be sufficiently beneficial to warrant implementation.</i>
<i>NRC should explain whether it intends any [sic] there to be any difference between these two phrases.</i>	
NRC RESPONSE: The NRC acknowledges the comment. The final rule and the revised GEIS clarify the language	

as follows:

(3) Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are not likely ~~not~~ to be sufficiently beneficial to warrant implementation.

39. Standard for Justifying a New or Changed Issue Categorization

IDENTIFIER: NEI2-16-2; NEI2-16- (1) -1; NEI2-16- (1) -2; NEI2-16(1)-3; NEI2-16(1)-4; NEI2-16(1)-6; NEI2-16(1)-14

COMMENT:

An industry commenter submitted several comments which asserted that the NRC was required to provide “a clear legal and regulatory basis for each proposed revision to the GEIS and associated NEPA regulations” and that the newly identified Category 1 and 2 issues lacked a legal or regulatory basis for inclusion within the revised GEIS. The commenter stated that a new Category 1 or 2 issue should only be included in the GEIS, and by extension, in the final rule, if the issue is within the scope of NEPA. The commenter then described the scope of NEPA, for any given issue, as the issue being “significant, reasonably foreseeable and environmental in nature.” The commenter stated that many of the new Category 1 or 2 issues described in the proposed rule failed to meet the above criteria. The commenter also asserted that NEPA placed “important limitations on what issues must be considered within the scope of an environmental review for license renewal.” In short, the commenter argued that NEPA placed restraints on those issues that an agency could consider under NEPA and asked NRC to identify the legal authority for inclusion of the new issues in the GEIS. The commenter also asserted that any new Category 1 or 2 issue must be within the scope of license renewal.

The commenter then objected to the inclusion of new Category 1 issues within the GEIS for the following subject matter areas: geology and soils, effects of dredging on water quality, exposure of terrestrial organisms to radionuclides, exposure of aquatic organisms to radionuclides, effects of dredging on aquatic organisms, impacts of transmission line right of way management on aquatic resources, and physical occupational hazards. The commenter also objected to the inclusion of new Category 2 issues within the GEIS for the following subject matter areas: groundwater and soil contamination, radionuclides released to groundwater, water use conflicts, thermal impacts on aquatic organisms, environmental justice, and cumulative impacts.

NRC RESPONSE:

The NRC disagrees with the commenter. The NRC’s legal basis for adding new Category 1 and 2 issues to the GEIS is NEPA. NEPA is broadly interpreted by the courts.²³ As such, a Federal agency has broad discretion in determining which issues it chooses to examine in its NEPA analyses. The NRC identified new issues in the scoping process for the revised GEIS and upon the basis of environmental reviews of license renewal actions conducted since the issuance of the 1996 GEIS. The NRC is aware of no court that interprets NEPA as narrowly as suggested by the commenter.²⁴ Other than restraints in an agency’s organic authority or in an applicable

²³ Springfield Tp. v. Lewis, 702 F.2d 426, 449 (3rd Cir. 1983) (citing cases omitted) (“For NEPA to fulfill the vision of its drafters, the statute must encompass a broad spectrum of environmental and socio-economic changes that would affect the quality of life”); Foundation for North American Wild Sheep v. US Dept. of Agriculture, 681 F.2d 1172, 1177 (9th Cir. 1982) *quoting* Calvert Cliffs’ Coordinating Committee, Inc. v. AEC, 449 F.2d 1109, 1122 (D.C. Cir. 1971) (“Before proceeding directly to the merits of the present controversy, we note the exceptionally broad scope of NEPA”); *Id.* *quoting* Scientists Institute for Public Information, Inc. v. AEC, 481 F.2d 1079, 1088 (D.C. Cir. 1983) (“The statutory phrase ‘actions significantly affecting the quality of the environment’ is intentionally broad, reflecting the Act’s attempt to promote an across-the-board adjustment in federal agency decision making so as to make the quality of the environment a concern of every federal agency”).

²⁴ Hanly v. Mitchell, 460 F.2d 640, 647 (2nd Cir. 1972), (citing cases omitted) *cert. denied*, 424 U.S. 967, 96 S. Ct. 1462 (1976) (“The National Environmental Policy Act contains no exhaustive list of so-called “environmental considerations,” but without question its aims extend beyond sewage and garbage and even beyond water and air pollution.”)

appropriations or authorizations law, an agency is only bounded by its discretion in what it determines to be a reasonable inquiry under NEPA.

The NRC disagrees with the commenter's assertion that the issue must first be found to be significant before it is within the scope of NEPA. The NEPA analysis, in part, is an inquiry to determine if an issue is significant.²⁵ By conducting a NEPA analysis, an agency determines whether a given potential impact is significant or not. The NRC has identified new Category 1 (generic) and 2 (site-specific) issues. The Category 1 issues are a class of potential impacts, arising from, or having some nexus to, the license renewal action that have been determined or are expected to, be both generic to all plants and to have a small impact (that is, not significant) during the license renewal term. The Category 1 classification, however, does not remove these issues from the scope of the NEPA analysis. If the applicant or if the NRC staff becomes aware of new and significant information with respect to these issues, then these impacts must be analyzed in the SEIS. For example, in several Category 1 issues, the NRC expects that the license renewal applicant will adhere to "best management practices" during the course of the license renewal term. This expectation of the applicant's adherence to best management practices forms the basis, in whole or in part, of the NRC determination that the issue is both generic and has a small impact. If, however, there is evidence that a given license renewal applicant has not adhered to best management practices during the initial license term, and there is no indication that the applicant intends to adhere to such practices during the license renewal term, then such a finding would constitute "new and significant" information that would require a site-specific analysis in a SEIS. Thus, any Category 1 issue has the potential to become significant in the presence of new and significant information.

As described in the statements of consideration for the final rule and in Chapter 1 of the revised GEIS, the NRC conducted extensive public outreach in developing the revised GEIS. All comments received from stakeholders were considered in the GEIS revision. In addition, the NRC has conducted over 40 plant-specific license renewal environmental reviews since the issuance of the 1996 GEIS. For each plant-specific license renewal review, the NRC evaluated the applicant's environmental report, conducted independent impact assessments, and reached conclusions for each environmental resource area that, along with the safety review, support the license renewal decision. In the development of the revised GEIS, the NRC reviewed various scientific studies and other literature, incorporated lessons learned and knowledge gained from completed license renewal environmental reviews, and considered comments received from stakeholders during the development of the revised GEIS and during plant-specific license renewal reviews. This process, together with the best professional judgment of NRC technical staff, serves as an adequate basis to identify new issues for consideration in the revised GEIS. In summary, the inclusion of the new and revised Category 1 and 2 issues is well within the purview of NEPA and NRC's NEPA compliance obligations, the scope of license renewal environmental review, and within NRC's jurisdiction and regulatory authority. No changes have been made in the GEIS or in the final rule in response to these comments.

This comment response serves as the primary response to all assertions by this commenter, whether in these comments or in others, that the NRC demonstrate the requisite statutory and regulatory authority to add the Category 1 and 2 issues identified by the commenter.

²⁵ See Mandelker, NEPA Law and Litigation 2d (2011), §§ 8.48-8.50 and cases cited therein.

IDENTIFIER: NEI2-16(1)-5

COMMENT:

NRC's re-evaluation of the GEIS findings and conclusions is based on the agency's 10-year review and extensive experience base. 74 Fed. Reg. 38, 118. On this point, the NRC states that "lessons learned and knowledge gained during previous license renewal reviews" provide a significant source of information for the GEIS revision. Additionally, notes the NRC, it analyzed "public comments on previous plant-specific license renewal reviews... to assess the existing environmental issues and identify new ones." Id. at 38,119. In this regard, the NRC describes in the proposed rule the process it followed to develop the revised GEIS. Id. at 38,120, col. 1. As discussed below, it is not clear that this entire process was followed in selecting all of the proposed new Category 1 and Category 2 environmental issues; or, in any event, the discussion in the proposed rule does not always reflect such a deliberate, multi-step selection approach.

NRC RESPONSE:

The NRC disagrees with this comment that its process for selecting new Category 1 and Category 2 issues was not deliberative. To the contrary and as further described in the NRC's response to comment NEI2-16-2, the NRC has conducted a careful review and update of the technical basis, as contained in the revised GEIS, for the findings presented in Table B-1 of this final rule. In doing so, the NRC reexamined issues from the 1996 GEIS and specifically applied the process outlined in Section 1.5 of the GEIS. As noted by the commenter, information considered in NRC's examination included lessons learned and knowledge gained during previous license renewal reviews and consideration of public comments on issues relevant to license renewal. This process also considered major points of view expressed by commenters relative to the impacts of license renewal in accordance with 10 CFR 51.71(b), as such views must be considered in the NRC's license renewal SEISs. The NRC staff's best professional judgment was a necessary and critical element of this overall process. As a result, the NRC has added new Category 1 and Category 2 issues, combined issues, and regrouped selected issues, as appropriate, based on the review conducted.

Application of the above made for a reasonable, measured, and very deliberative process by which issues were identified, evaluated as to their environmental significance, and either added or subtracted from the findings. Changes to findings were made in consideration of the scope of the NRC's NEPA compliance obligations, the scope of license renewal environmental review, and the NRC's jurisdiction and regulatory authority.

40. Application of Proposed Rule to Existing Plants Already In the License Renewal Process

IDENTIFIER: NEI1-7-3; RMD-NEI3-5; NEI2-16-3; NEI2-16(1)-21

COMMENT:

Several industry comments requested that license renewal applications filed with the NRC during a time period ending 18 months after the effective date of the final rule be processed under the rule in place prior to the effective date. The primary comment is set forth below:

In total, the changes being proposed to the rule, regulatory guide, and GEIS (as well as concurrent changes being made to the standard review plan for license renewal) are extensive and significant in terms of how the proposed changes will affect the preparation, submittal, docketing, and review of future license renewal applications. Therefore, it is important for the industry that the effective date of the final rule, when issued, provide adequate time and flexibility such that licensees who have substantially completed the research, reviews, and analyses necessary to develop a license renewal application will not be unduly impacted by having to revisit and supplement completed work, thereby resulting in the applicant having to significantly revise and restructure the application.

Throughout the extensive regulatory process for review and completion of 59 license renewal applications for nuclear power plants to date, no impact on the environment has been found unreasonable as it relates to preserving the option of license renewal for energy planning decision-makers. Accordingly, we view the proposed changes (taking into account the comments in our two letters and provided at the NRC public meetings) as refinements and enhancements that should improve the transparency, efficiency and practicality of the license renewal regulatory process - not as changes that are necessary to correct deficiencies in the regulatory framework or to assure adequate protection of public health and the environment. With that understanding, we suggest that the NRC allow licensees that submit license renewal applications within 18 months following the effective date of the new rule to not have to comply with the new rule—i.e., such licensees should have the option of having their application docketed, reviewed and completed under the current rule.

NRC RESPONSE:

In order to both fairly accommodate the industry's request and not unduly delay the final rule's implementation, the NRC has set the compliance date for the final rule one year after the date the final rule is published in the *Federal Register*.

41. Relicensing Qualifications

IDENTIFIER: Hubbard-2-11

COMMENT:

*To date, the NRC has not denied **ANY** re-licensing application despite the inevitable fatigue of critical components after 40 years of operation and the fact that onsite storage of radioactive wastes and security of fuel pools remain serious unresolved issues. Many of the issues proposed to be handled under a generic analysis are inappropriate, and so obviously so the integrity of the NRC is at issue. Many of the proposed revisions appear to benefit the nuclear plant owners to the detriment of the agency's legislated goals of protecting human and environmental health and national security.*

NRC RESPONSE:

The focus of the license renewal safety review is on managing the detrimental effects of aging. The review provides reasonable assurance that the effects of aging will be managed for the period of extended operation such that systems, structures, and components (SSCs) will continue to perform their intended functions in accordance with the plant's current licensing basis. Many of the existing programs and regulatory requirements that already provide adequate aging management will continue to be applicable after renewal. The license renewal review focuses on those SSCs for which current activities and requirements may not be sufficient to manage aging in the period of extended operation.

To date, the NRC has approved all of the applications for license renewal for which the review has been completed. The NRC has found an application insufficient to start the review and has rejected an application. The NRC has also halted the review process until sufficient information is provided to continue the review. Although the NRC can deny a request to renew a license if the applicant did not provide appropriate or adequate information in its initial application, the NRC would identify the deficiencies and the applicant would be allowed to resubmit the application or provide additional information. This process can continue until the NRC concludes that the application is sufficient to complete the review.

The NRC has clearly defined the requirements for license renewal and the nuclear industry has the experience of many successful license renewal requests. Because of the cost and the commitment associated with an application, it is unlikely that an applicant would intentionally submit an application for license renewal that was so flawed that the NRC staff would issue a denial. Finally, if problems with SSCs of the facility were identified during the review, the applicant would likely be able to make the required modifications or put in place a mitigation plan that would be acceptable to the NRC. Identified problems with SSCs would be addressed immediately, and any necessary changes made under the current operating license rather than waiting for the period of extended operation.

With respect to the commenter's assertion that many of the issues proposed to be handled under a generic analysis are inappropriate, see the NRC responses to the Hubbard-2-1 through Hubbard-2-10 comments.

The commenter's statements that many of the proposed revisions appear to benefit the nuclear industry or that the integrity of the NRC is otherwise compromised is interpreted by the NRC as general opposition to the proposed rule being adopted as a final rule. The commenter does not

present any further information or argument to support its assertions that many of the amendments described in the proposed rule benefit the nuclear industry or that the NRC's integrity has been compromised. Moreover, the comment does not provide or describe any specific item, with respect to either of these assertions, to which the NRC can respond.

No change was made to the final rule as a result of this comment.

42. NEPA-Compliant Review

IDENTIFIER: Riverkeeper-20-2

COMMENT:

The Proposed Rule repeatedly emphasizes that the changes made by the Revised GEIS will "simplify and streamline the NRC review process. [commenter footnote 5] Understanding the efficacy of having generic EISs pursuant to the National Environmental Policy Act of 1969 ("NEPA"), i.e., to avoid unnecessary repetition of review, a reading of the Proposed Rule leads one to surmise that the NRC's primary concern was how to further streamline the process. Indeed, the NRC proudly touts that "[t]he 1996 GEIS has been effective in focusing NRC resources on important environmental issues and increased efficiency of the environmental review process. Currently, 51 nuclear units at 29 plant sites have received renewed licenses." commenter footnote 6].

[Commenter footnote 5: See, e.g., Proposed Rule at 38,123, 38,124, 38,126, 38,128]

[Commenter footnote 6: *Id.* at 38,119.

Yet, the focus of the NRC should be on performing an objective, NEPA-compliant, comprehensive review and not to efficiently get reviews done at breakneck speed. This misplaced emphasis has manifested itself throughout the Revised GEIS, in the failure of the NRC to provide for adequate review of various environmental issues.

NRC RESPONSE:

The NRC disagrees with the comment. The commenter construes the words "simplify" and "streamline" in a much broader context than intended. The NRC revised the GEIS to focus on those resources that may be impacted by license renewal. This focus is a change from the analyses of the 1996 GEIS, which were based upon plant systems, rather than on the potentially impacted resources. The NRC believes that this change in focus from a plant system based approach to a resource based approach more closely conforms to NEPA practice and in this sense, simplifies and streamlines the NRC's NEPA process.

Further, the NRC has conducted a careful review and update of the technical basis, as contained in the revised GEIS, for the final rule's amendments to Table B-1. As described in the preamble to the final rule, a number of issues have been consolidated and/or reclassified based on review of the 1996 GEIS, and no issues have been eliminated. The changes in the GEIS and rule were not contemplated so as to diminish or otherwise truncate the NRC's environmental review process. Rather, they were undertaken to further improve the efficiency of the process by facilitating environmental reviews that clearly focus on the central and important environmental issues. In point, the analysis and treatment of some issues that have resulted from consolidating similar, closely related environmental aspects with similar impacts on a resource (e.g., cooling tower impacts on vegetation) does facilitate the review for that particular issue.

It is not the intent of the revised GEIS or the final rule to perform site-specific NEPA reviews at "breakneck speed." This portion of the comment is interpreted by the NRC as general opposition to the proposed rule being adopted as a final rule. The commenter does not present any further information or argument to support its assertion that the intent of the revised GEIS or

the final rule is to perform NEPA reviews at “breakneck speed.”

The revised GEIS critically evaluates a substantial body of new data and findings regarding environmental impacts of continued operations during the license renewal term and refurbishment associated with license renewal. This body of new data and findings regarding environmental impacts is based upon information obtained and lessons learned from previous license renewals conducted since the 1996 GEIS was issued. The analyses set forth in the revised GEIS serve to better inform and to facilitate the NRC’s environmental review process to the benefit of the public and industry alike. Many of the final rule’s amendments require the license renewal applicant to provide additional information in its environmental report, thereby enhancing the NRC’s compliance with NEPA.

43. Reasonable Assurance

IDENTIFIER: NYS AG-14-2

COMMENT:

A State commenter asserted that the NRC's NEPA process for license renewal actions, as established in the 1996 GEIS, "has not worked well." Specifically, the commenter requested the establishment of an independent NRC forum that would hear claims that a given report, study, or event constitutes "new and significant" information, thus requiring the site-specific analysis of an issue determined to be generic (i.e., classified as Category 1). Excerpts from the comment are set forth below:

Not a single issue of new and significant information has resulted in a change to the GEIS as applied to a specific plant. In none of the 50 license renewal proceedings that have occurred has any issue previously deemed generic and classified as "Category 1" been recognized to be a site-specific "Category 2" issue, regardless of the strength of the evidence offered to support that view.

In short, the State of New York submits that the current approach does not comply with the National Environmental Policy Act or CEQ regulations such as 40 C.F.R. §§ 1502.9, 1508.27, and 1508.28 because it curtails consideration of new and significant information and site-specific concerns that were characterized—and then codified—as generic issues back in 1996.

The question of whether new and significant information has been presented and whether that information warrants a site-specific analysis of an issue should be made by an independent authority with a mandate to fairly consider the evidence—and in accordance with NEPA, CEQ regulations, and judicial decisions that provide standards for evaluating whether or not a report, study, or event constitutes new and significant information. These comments propose that an Atomic Safety and License Board [ASLB] could ably fill that task and propose a mechanism that would not unnecessarily interfere with the license renewal decision-making process. Indeed, such a process could expedite resolution of such issues when compared to the current system.

Because the current system has not provided an effective mechanism for States and the general public to seek modifications to the GEIS [...] the current system must be modified to provide an efficient and effective method to accommodate new and significant information.

Since leaving it to the NRC Staff or the cumbersome rule making petition process has not proven effective, the State of New York urges the Commission to create a special ASLB to hear claims, with regard to individual license renewal proposals, that specific issues should be allowed to be addressed in the license renewal proceeding even though such site-specific consideration may have been precluded by discussion in the GEIS (and then replicated in a regulation).

NRC RESPONSE:

The NRC disagrees with the comment. The approach used by the 1996 GEIS and now, under this final rule, the approach used by the revised GEIS is fully compliant with NEPA. The NRC has established its own regulations to implement NEPA in 10 CFR Part 51. The NRC voluntarily takes account of the CEQ regulations (10 CFR 51.10(a)) and, through incorporation by reference, has adopted the CEQ's definitions of several terms (10 CFR 51.14(b)).

The fact that the NRC determined that no “new and significant” information ever arose in a site-specific environmental review since the 1996 GEIS was issued, does not negate the validity of the various license renewal reviews or the 1996 GEIS process itself. Many, if not all, of those issues classified as Category 1 were studied exhaustively prior to and during the development of the 1996 GEIS. In the revised GEIS, the NRC finds that these issues were properly classified as Category 1 (although many Category 1 issues from the 1996 GEIS were consolidated in the revised GEIS, no single issue, Category 1 or 2, was eliminated). In short, the technical and scientific studies and data which supported the classification of these issues in 1996 as Category 1 remain valid under the revised GEIS. Moreover, based upon lessons learned since the issuance the 1996 GEIS as well as public comments received during the development of the revised GEIS and during the comment period for the proposed rule, the final rule adds a new Category 2 issue to Table B–1, “Radionuclides released to groundwater.” As a Category 2 issue, license renewal applicants will have to address this issue in their environmental reports.

Finally, the NRC disagrees with the commenter’s request to establish an “independent authority” to determine whether a given report, study, or event constitutes “new and significant information.” Specifically, the commenter requests that a “special ASLB” be established “to hear claims, with regard to individual license renewal proposals, that specific issues should be allowed to be addressed in the license renewal proceeding.” Clearly, the establishment of such an independent authority is not required by NEPA. In addition, the NRC license renewal hearing process allows interested parties to file contentions on environmental (including NEPA) issues as well as safety issues. The commenter asserts that the codification of the GEIS findings in the NRC regulations at Table B–1 of 10 CFR Part 51, Subpart A, Appendix B prevents an interested party (the “intervener”) from challenging an NRC finding that there is no “new and significant information” with respect to a given Category 1 issue (as the issue is Category 1, or generic, there is no need for either the license renewal applicant or the NRC staff to analyze the issue in the site-specific environmental review documents). The NRC regulations, however, allow for an intervener to petition the ASLB to waive the regulation and thus, hear the “new and significant information” contention.²⁶

In the event that the intervener raises what it believes to be “new and significant information” that is generic to all plants (that is not unique to the plant subject to license renewal), then the proper course is to file a petition for rulemaking.²⁷ Any attempt to establish a special ASLB for such generic “new and significant information,” in a specific license renewal proceeding would subvert both the NRC licensing and rulemaking processes. The Commission has ruled previously that “[i]t is not required that the public participation aspect of NEPA be accomplished in an adjudicatory proceeding.”²⁸

No change was made to the final rule as a result of this comment.

²⁶ 10 CFR 2.335(b). A waiver under 10 CFR 2.335(b) would, in effect, suspend 10 CFR 51.53(c)(3)(i), which permits license renewal applicants to not address Category 1 issues in their environmental reports.

²⁷ In the matter of: Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc. (Pilgrim Nuclear Power Station), 64 N.R.C. 257, 294-299 (2006); see also Massachusetts v. United States, 522 F.3d 1115, 125 (1st Cir. 2008).

²⁸ In the matter of: Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc. (Pilgrim Nuclear Power Station), 64 N.R.C. at 298.

IDENTIFIER: NY DOS-18-10

COMMENT:

The original licensing of most nuclear facilities that may be utilizing procedures proposed in this rule will likely have been conducted over 30 years ago. Significant new information, altered population patterns, changing societal values, and unforeseen effects are likely to have occurred since a facility was first licensed and as such, significant analysis and careful consideration is needed on a site specific basis to determine the appropriateness of re-licensure. It may be advantageous to consider as many potential impacts as practical in the context of a site specific SEIS given public, and state and federal agency scoping input.

NRC RESPONSE:

The NRC disagrees with this comment. The NRC's ongoing safety program focuses on prevention of safety problems so that potential issues do not lead to accidents and inadvertent releases requiring cleanup. In point, the NRC requires licensees to test, monitor, and inspect the condition of safety equipment and to maintain that equipment is in reliable operating condition over the operating life of the plant. The NRC also requires licensees to continuously correct deficiencies that could impact plant safety (e.g., leaking valves, degraded or failed components due to aging or operational events). Over the years, licensees have replaced or overhauled plant equipment as needed. As appropriate, licensees have also upgraded equipment or installed new equipment to replace or supplement original systems. The testing, monitoring, inspection, maintenance, and replacement of plant equipment provide reasonable assurance that this equipment will perform its intended safety functions during the license period. This conclusion applies both to operations under the current license and operations under the term of license renewal.

The NRC provides continuous oversight of each plant under the NRC's inspection and enforcement programs. The NRC's Reactor Oversight Process integrates the NRC's inspection, assessment, and enforcement programs. The operating reactor assessment program evaluates the overall safety performance of operating commercial nuclear reactors and communicates those results to licensee management, members of the public, and other government agencies. The assessment program collects information from inspections and performance indicators in order to enable the NRC to arrive at objective conclusions about a licensee's safety performance. Based on this assessment information, the NRC determines the appropriate level of agency response, including supplemental inspection and pertinent regulatory actions ranging from management meetings up to and including orders for plant shutdown. The NRC conducts follow-up actions, as applicable, to ensure that the corrective actions designed to address performance weaknesses were effective.

In addition, in license renewal, the NRC considers the impacts on the environment of a given plant's continued operations after license renewal and refurbishment associated with license renewal. The SEIS prepared by the NRC will consider any updates to the affected environment. In this context, it should be noted that the NRC's regulatory limits remain in place. For example, the dose limit for a given radionuclide effluent will not change regardless of changes in population. As long as the facility operates within the regulatory limits set by the NRC regulations, the impacts on the environment (for those issues classified as Category 1) will be small.

No changes have been made in the final rule in response to this comment.

IDENTIFIER: DWM-5-1

COMMENT:

I would ask that the NRC do yearly updates on every issue. As nuclear reactors age, more problems develop and are not able to be assessed adequately in a ten year cycle, but should be examined annually or even monthly/daily/whatever is pertinent to each specific issue.

NRC RESPONSE:

The NRC disagrees with this comment. Annual assessments of the issues associated with license renewal are not needed because the NRC has regulations and programs in place to ensure that nuclear power plants are operated safely on an ongoing basis. All plants were granted, consistent with the NRC regulations, operating licenses. The NRC requires licensees to test, monitor, and inspect the condition of safety equipment and to maintain that equipment in reliable operating condition over the operating life of the plant, including any license renewal terms. The NRC also requires licensees to continuously correct deficiencies that could impact plant safety (e.g., leaking valves, degraded or failed components due to aging or operational events). Over the years, licensees have replaced or overhauled plant equipment as needed. As appropriate, licensees have also upgraded equipment or installed new equipment to replace or supplement original systems. The testing, monitoring, inspection, maintenance, and replacement of plant equipment provide reasonable assurance that this equipment will perform its intended safety functions during the license period. This conclusion applies both to operations under the current license and operations under the term of license renewal.

The NRC's safety regulations are based on the Atomic Energy Act of 1954, as amended, and require a finding of reasonable assurance that the activities authorized by an operating license (or an amendment thereto) can be conducted without endangering the health and safety of the public, and that such activities will be conducted in compliance with the NRC's regulations.

The NRC provides continuous oversight of each plant under the NRC's inspection and enforcement programs. The NRC's Reactor Oversight Process integrates the NRC's inspection, assessment, and enforcement programs. The operating reactor assessment program evaluates the overall safety performance of operating commercial nuclear reactors and communicates those results to licensee management, members of the public, and other government agencies. The assessment program collects information from inspections and performance indicators in order to enable the NRC to arrive at objective conclusions about a licensee's safety performance. Based on this assessment information, the NRC determines the appropriate level of agency response, including supplemental inspection and pertinent regulatory actions ranging from management meetings up to and including orders for plant shutdown. The NRC conducts follow-up actions, as applicable, to ensure that the corrective actions designed to address performance weaknesses are effective.

The NRC has requirements to ensure adequate protection or no undue risk to public health and safety through design, construction operation, maintenance, modification, and quality assurance measures. Consistent with that purpose, enforcement actions have been used as a deterrent to emphasize the importance of compliance with these requirements and to encourage prompt identification and prompt, comprehensive correction of violations. The NRC enforcement program supports the overall safety mission in protecting the public health and safety and the environment. The enforcement program: (1) assesses the significance of individual inspection findings and events; (2) formulates the appropriate agency response to these findings and events; (3) emphasizes good performance and compliance; (4) provides incentives for

performance improvement; and (5) provides public notification of the NRC's views on licensees' performance and actions.

No changes have been made in the final rule in response to this comment.

44. Applicable Federal Laws and Regulations

IDENTIFIER: NEI1-7-2

COMMENT:

Some of the comments in Attachment 2 recommend that NRC rely on decisions of federal and state agencies in considering the impacts of license renewal on the environment. Agency decisions relevant to regulatory requirements such as the Clean Water Act, the Clean Air Act, and other environmental regulations, and documented in permits and authorizations, are based on a thorough site-specific analysis of potential impacts to ensure maintenance of the chemical, physical and biological integrity of the environment. Nuclear plants are required to operate in compliance with all permits, which are renewed on a periodic basis and are subject to regulatory and public scrutiny. Although 10 CFR 51 implies that compliance with environmental quality standards and regulations is not a substitute for and does not negate the requirement to weigh all environmental effects, NEI believes it would not be efficient for NRC to duplicate the thorough, site-specific analyses performed by other regulatory agencies, equivalent to that performed by the NRC, as documented in permits and authorizations issued by those agencies.

NRC RESPONSE:

The NRC disagrees with this comment. The applicable NRC regulation, 10 CFR 51.71(d) clearly states, with respect to the Clean Water Act, that the applicant's compliance with that statute "is not a substitute for, and does not negate the requirement for the NRC to weigh all environmental effects of the proposed action, including the degradation, if any, of water quality."²⁹ Moreover, the NRC considers an applicant's compliance with other environmental regulatory regimes, as required by 10 CFR 51.71(d). The NRC, however, does not consider the analysis required because an issue has been classified as Category 2, or because new and significant information has arisen with respect to a Category 1 issue, as duplicative of the analyses performed by other agencies.

The NRC in its SEIS, or the applicant in its environmental report, may rely upon data generated by the analyses performed by other agencies, but the NRC, to comply with NEPA, must make its own independent environmental evaluation of the potential impacts.

No changes have been made in the final rule in response to this comment.

IDENTIFIER: NEI1-7(2)-11

COMMENT:

Recommend the following revision since it would not be efficient for NRC to duplicate the thorough, site-specific analyses performed by other regulatory agencies, equivalent to that performed by the NRC, as documented in permits and authorizations issued by those agencies.

For consistency with NRC's Environmental Protection Plan template for new plants, permits and regulations and associated compliance, will be utilized when determining

²⁹ 10 CFR 51.71(d), n. 3.

~~the with the environmental quality standards and requirements of the Federal Water Pollution Control Act (imposed by EPA or designated permitting states) is not a substitute for, and does not negate the requirement for NRC to weigh all environmental effects of the proposed action, including the degradation, if any, of water quality, and to consider alternatives to the proposed action that are available for reducing adverse effects. Where an environmental assessment of aquatic impact from plant discharges...~~

NRC RESPONSE:

The NRC disagrees with this comment. See the NRC's response to comment NEI1-7-2 as related to this issue. As part of the license renewal environmental review process, the NRC evaluates site-specific data provided by the applicant, other Federal agencies, State agencies, tribal and local governments, as well as information from members of the public. In addition, the NRC performs independent reviews of the plant-specific environmental impacts of license renewal in accordance with NEPA and the NRC's requirements in 10 CFR Part 51. The NRC neither seeks to duplicate the efforts of other regulatory agencies nor infringe upon areas of regulatory jurisdiction that are not its own. Regardless, the NRC is an independent regulatory agency and must perform an independent analysis in its plant-specific SEISs that weigh all factors relevant to the environmental impacts of license renewal. As an independent regulatory agency with public trust responsibilities for protecting public health and the environment, the revision suggested by the commenter to the footnote under 10 CFR 51.71(d) would run contrary to the NRC's need to weigh all environmental effects in providing comprehensive environmental analyses to support the Commission's decision making.

No changes have been made in the final rule in response to this comment.

IDENTIFIER: NY DOS-18-1

COMMENT:

The Department of State (DOS) is responsible for administering New York State's Coastal Management Program (CMP) prepared pursuant to the Coastal Zone Management Act and the federal consistency provisions found at 15 CFR part 930. These provisions specify the procedures for federal consistency review of most federal actions within NYS's Coastal Area, including direct actions, funding assistance, and permitting or other authorization actions. The re-licensure of existing nuclear power plant within NYS's coastal area will require federal agency authorizations and as such, will be reviewed by DOS for its consistency with the CMP and all applicable policies contained therein. While DOS is interested in providing generic comments on the GEIS, we feel that future applicants should be directed to provide a signed Federal Consistency Assessment Form (FCAF) with the associated consistency certification, and all necessary data and information required to support the certification to DOS concurrently with federal submittals and be encouraged to preliminarily involve DOS as early in the planning phases of the proposed re-licensure as possible.

NRC RESPONSE:

The NRC acknowledges the New York Department of State's comments. With respect to license renewal environmental reviews encompassing the preparation of its plant-specific SEISs to the GEIS, the NRC considers an applicant's compliance with environmental quality standards

and requirements, including required certification and permitting provisions, imposed by regulatory agencies, in accordance with 10 CFR 51.71(d). As required by 10 CFR 51.45(d), applicants for license renewal must discuss in their environmental reports to the NRC their compliance status with applicable environmental quality standards and requirements, including all Federal permits, licenses, approvals and other entitlements which must be obtained. Section 9 of RG 4.2 S1, Rev. 1 (DG-4015), *Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications*, provides guidance to applicants regarding this compliance status assessment. Section 9 also directs license renewal applicants to provide additional information on regulatory requirements that may be affected by the renewal and continued operation of NRC-licensed nuclear power plants. Section 3.2.1 of the revised GEIS specifically addresses the Federal consistency certification process under the Coastal Zone Management Act (CZMA) and the need for applicants to coordinate with the State agency that manages the State CZMA program on such consistency determinations.

The NRC strives for early integration of its environmental review and NEPA processes with applicable interagency review and consultation requirements, and the NRC staff guidance specifically prescribes the need for coordinating with licensees on the status of their CZMA consistency certification process. Nevertheless, beyond the NRC's need for applicants to demonstrate that renewal of an operating license is consistent with the State's Coastal Zone Management Plan and documentation of the State's concurrence, the NRC has no need to separately prescribe consistency submission requirements outside those of the CZMA-delegated state, and has no regulatory authority to do so.

No changes have been made in the final rule in response to this comment.

45. Public Participation and Public Meeting Access

IDENTIFIER: A4NR-11-1

COMMENT:

In 2003, the Executive Director of Alliance for Nuclear Responsibility—then representing another San Luis Obispo, California organization—was the only member of the public to attend the Nuclear Regulatory Commission's (NRC) initial west coast meeting opportunity for public participation in the Generic Environmental Impact Statement Revision held in California. It should seem obvious to most governmental agencies that when only one member of the public attends (in a state with a population of 36 million) there is a cause to doubt that public believed their participation was welcomed (or accessible, or convenient). It should have raised questions about the NRC's ability to notify the public of meetings and opportunities for participation.

Comments provided that evening in 2003 included a very important point which the NRC has again failed to seriously consider in the scheduling of meetings for public comments on its latest GEIS revision—the need to hold the meetings near the reactor communities. Here they would find the citizens—the "stakeholders" whom the NRC refers to in its publications—with the most valid concerns about continued operation of aging reactors and the ongoing creation and onsite storage of highly radioactive waste on our state's fragile coast. In fact, it was clear from the sign-in sheets at GEIS meetings held in 2009 that the insistence by California's elected representatives that meetings be held near reactor sites resulted in the only meetings where more than [sic] two members of the "public" were in attendance. A4NR, et al, continues to question sincerity of the NRC's commitment to openness and transparency when the local public has to turn to its elected officials in order for the NRC to schedule meetings in affected communities.

When the NRC scheduled of [sic] public meetings on the GEIS Revision over a hundred miles from either Diablo Canyon, SONGS or any other reactor community, it remains difficult for the public to believe the NRC considers our input valuable. The locations chosen by the NRC signaled to the public, to those who live within the "fallout zones" of these and many other reactor facilities—and to their elected representatives—that their input was neither encouraged nor valued. Lack of recognition that the public can and should provide valuable insight into the NRC's oversight process continues. The NRC's inability to listen to the public in 2003 resulted in wasted time and resources and shadowed the public's perception of the purported "openness" and transparency of the NRC's current license renewal revisions.

NRC RESPONSE:

The NRC disagrees with the commenter's assertions about the NRC's commitment to openness and transparency during its rulemaking process. The NRC has a long-standing practice of conducting its regulatory responsibilities in an open and transparent manner. In that way, the NRC keeps the public informed of the agency's regulatory, licensing, and oversight activities. The NRC views nuclear regulation as the public's business and, as such, believes it should be transacted as openly and candidly as possible to maintain and enhance the public's confidence. Ensuring appropriate openness explicitly recognizes that the public must be informed about, and have a reasonable opportunity to participate meaningfully in, the NRC's regulatory processes. This means that public stakeholders must have access to clear and understandable information about the NRC's role, processes, activities, and decision-making. The NRC encourages members of the public to participate in the rulemaking process and contribute ideas

and expertise so that the NRC can make regulatory decisions with the benefit of information from a wide range of stakeholders.

Openness as applied to this rulemaking involved many public outreach activities. At sites across the country, the NRC held four public scoping meetings in 2003 and six public meetings in 2009 during the comment period for the proposed rule and draft revised GEIS. The NRC announced the time and location in advance of each public meeting on its public Web site, in newspapers, and in *Federal Register* notices. The purposes of these meetings were to: (1) collect comments; (2) provide an open forum for members of the public to talk with the NRC staff; (3) introduce the proposed rule amendments and GEIS revision; and (4) describe the next steps in the rulemaking and GEIS revision processes. These meetings were held to ensure openness, provide additional opportunities for public participation, and build positive relations with stakeholders and confidence in the rulemaking and GEIS revision process.

For economic and logistical reasons, it is not practical to hold public meetings near each operating nuclear power plant. Meeting locations were chosen based on the NRC's regional structure and to achieve as much public participation as possible. Open phone lines were provided at each public meeting for those who could not attend the meeting in person. The public meeting at NRC headquarters in Rockville, Maryland was broadcast via a "webinar" so that members of the public could see and listen to the presentation, ask questions, and provide comments from anywhere in the U.S. On June 21, 2011, the NRC held an additional public meeting at NRC headquarters in Rockville, Maryland, to discuss the implementation of the final rule. On January 11, 2012, a public Commission meeting was held at NRC headquarters at which invited representatives from industry and public interest groups gave their perspective on the anticipated changes to 10 CFR Part 51 and the draft revised GEIS.

In response to public requests, the NRC extended the public comment period on the proposed rule and draft revised GEIS from 75 days to 165 days to allow more time for the submittal of public comments. In addition, the *Federal Register* notices for the proposed rule and draft revised GEIS provided contact information (i.e., e-mail address and phone number) of the NRC staff available to respond to any requests for more information about this rulemaking. The *Federal Register* notices and staff presentations at the public meetings also described the numerous ways that were made available to submit comments such as via e-mail, regular mail, and online via the Federal Government's rulemaking Web site <http://www.regulations.gov> (by searching Docket ID NRC-2008-0608).

All comment submissions received by the NRC on the proposed rule and draft revised GEIS were made available at the NRC Public Document Room located at NRC headquarters or online at <http://www.regulations.gov> (by searching Docket ID NRC-2008-0608) and from the NRC's Web site at <http://www.nrc.gov/reading-rm/adams.html>. The NRC believes that its goal of openness and transparency was accomplished because of the many constructive public comments that were received on the proposed rule and draft revised GEIS.

No changes have been made in the final rule in response to this comment.

46. License Renewal Process

IDENTIFIER: NYS AG-14-1

COMMENT:

NRC relies on the classification of issues as Category 1 (generic) or Category 2 (site-specific) to define the kinds of information that will be available to the public regarding those issues, and the public's ability to be involved in governmental decisionmaking regarding nuclear power plants in New York. The State has significant concerns about Staffs continued reliance on the thirteen-year-old categorizations and proposal to continue such improper classifications in the Proposed GEIS and Proposed Rule.

NRC RESPONSE:

The NRC disagrees with the comment. Essentially, the commenter is asserting that the technical data underlying the GEIS is outdated. The Commission stated in the introductory remarks to Appendix B of Subpart A to 10 CFR Part 51, "Environmental Effects of Renewing the Operating License of a Nuclear Power Plant" its intent to review the assessment of impacts related to the renewal of a nuclear power plant's operating license and update it on a 10-year cycle, if necessary. These findings are presented in 10 CFR 51, Table B-1, "Summary of Findings on NEPA Issues for License Renewal of Nuclear Power Plants." Table B-1 summarizes the findings of NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (May 1996). As such, the NRC is publishing this final rule to amend provisions of 10 CFR Part 51 and is issuing a revised GEIS concurrent with this rule. The revised GEIS evaluates the environmental issues and findings of the 1996 GEIS with the purpose of determining whether the findings presented in the 1996 GEIS remain valid. As part of its 10-review, the NRC has conducted a careful review and update of the technical basis, as contained in the revised GEIS, for the findings presented in Table B-1. The inclusion of additional Category 1 and Category 2 issues and other changes presented in Table B-1 reflect lessons learned and knowledge gained during previous license renewal reviews and consideration of public comments on issues relevant to license renewal.

No changes have been made in the final rule in response to this comment.

47. Out of Scope Comments

IDENTIFIER: SLOMFP-13-1

COMMENT:

The fact that the NRC has newer and more rigorous standards for reactor safety in the new generation of nuclear power plants is a tacit admission that those of the past are inadequate to protect human health and the environment. The NRC must apply updated and more stringent rules and regulations regarding safeguards and security for NEW reactors to existing facilities. If the new reactor standards are deemed necessary to protect human health and the environment, then such standards should be applied to any reactor given permission to operate beyond its original license.

NRC RESPONSE:

The NRC disagrees with the comment. The National Environmental Policy Act (NEPA) process focuses on environmental impacts rather than on issues related to the safety of an operation. Safety issues become important to the environmental review when they could result in environmental impacts, which is why the environmental effects of postulated accidents are considered in the site-specific supplement to the generic environmental impact statement on license renewal (SEIS). Because the NEPA regulations do not include a safety review, the NRC has codified the regulations for conducting an environmental impact statement separate from the regulations for reviewing safety issues during license renewal. The regulations governing the environmental review are in 10 CFR Part 51 and the regulations covering the safety review are in 10 CFR Part 54. For this reason, the license renewal process includes an environmental review that is distinct and separate from the safety review. Because the two reviews are separate, operational safety issues and safety issues related to aging are considered outside the scope for the environmental review, just as the environmental issues are not considered as part of the safety review. However, safety issues that are raised during the environmental review are forwarded to the appropriate NRC organization for consideration and appropriate action.

The NRC performs a safety review to determine whether there is reasonable assurance that activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis (CLB). The CLB changes as documents such as the final safety analysis report (FSAR) or the Technical Specifications are revised or as the licensee's regulatory commitments change. As a result, the NRC requires that each year after submittal of the license renewal application and at least 3 months before scheduled completion of the NRC review, the applicant submit an amendment to the renewal application that identifies any change to the CLB of the facility that would materially affect the contents of the license renewal application.

The intent of the NRC's safety review is to determine if the applicant has adequately demonstrated that the effects of aging will not adversely affect any systems, structures, or components, as identified in 10 CFR 54.4. When the plant was designed, certain assumptions were made about the length of time the plant would be operated. During the renewal process, the applicant must also confirm whether these design assumptions will continue to be valid throughout the period of extended operation or whether aging effects will be adequately managed. The applicant must demonstrate that the effects of aging will be managed in such a way that the intended functions of "passive" or "long-lived" structures and components (such as

the reactor vessel, reactor coolant system, piping, steam generators, pressurizer, pump casings, and valves) will be maintained during extended operation. For active components (such as motors, diesel generators, cooling fans, batteries, relays, and switches) surveillance and maintenance programs will continue throughout the period of extended operation.

If additional aging management activities are needed, the applicant may be required to establish new monitoring programs or increase inspections. For instance, applicants should specify activities that need to be performed (such as water chemistry and inspections) to prevent and mitigate age-related degradation. These activities increase the likelihood that the program is effective in minimizing degradation and that a component is replaced if specified thresholds are exceeded.

No changes have been made in the final rule in response to this comment.

IDENTIFIER: Riverkeeper-20-1

COMMENT:

Many of the concerns articulated in Riverkeeper's Indian Point license renewal environmental scoping comments and supplemental site-specific environmental impact statement comments would remain unresolved by the NRC's Revised GEIS, and Riverkeeper provides them as exhibits in further support of the comments made herein, for your consideration in the instant rulemaking proceeding: Riverkeeper Comments on Environmental Scoping for the Indian Point License Renewal Proceeding, Docket Nos. 50-247, 50-286 (Oct. 12, 2007), ADAMS Accession No. ML072960455 (hereinafter "Riverkeeper's Scoping Comments"), are attached hereto as Exhibit C; Riverkeeper Comments on Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 38, Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3, Draft Report for Comment (March 18, 2009), ADAMS Accession No. ML090860983 (hereinafter "Riverkeeper's IP DSEIS Comments"), are provided herewith as Exhibit D.

NRC RESPONSE:

The NRC has responded to the referenced comments in NUREG-1437, Supplement 38, published in 2010. No changes have been made in the final rule in response to this comment.

IDENTIFIER: Anon2-23-4; Anon2-23-10; Plotkin-24-1; Anon3-25-1; Anon4-26-1; PRWS-28-1; Anon5-29-1

COMMENT:

Several commenters submitted Internet articles questioning the operational safety of nuclear power plants. One commenter submitted an Internet article about an incident involving the release of radioactive scrap metal for recycling from an operating nuclear power plant. Another commenter submitted a press release providing corporate literature on radioactive waste disposal services. One commenter submitted a document on nuclear disarmament.

NRC RESPONSE:

Issues related to the safety of operating nuclear power plants are outside the scope of this rulemaking. See the response to comment SLOMFP-13-1 for further information.

An Internet article presenting information specific to an incident involving the recycle of scrap material released from an operating nuclear power plant and an advertisement for waste disposal services are both outside the scope of this rulemaking. The issue of nuclear disarmament is unrelated to the license renewal process and also outside the scope of this rulemaking.

No changes have been made in the final rule in response to these comments.